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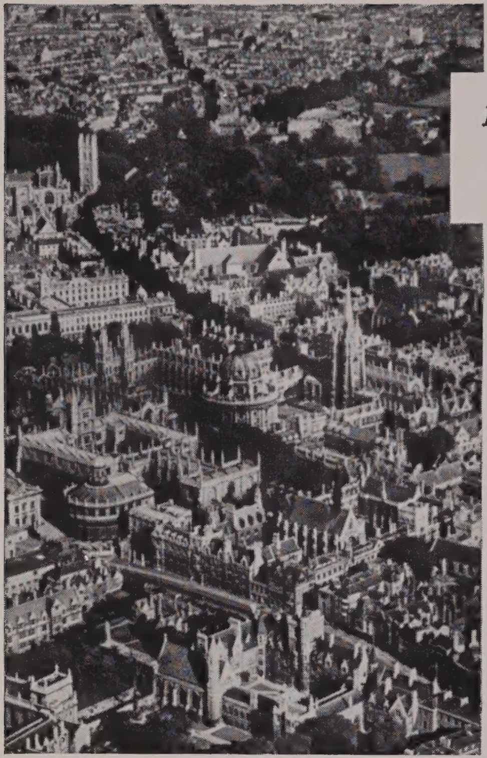

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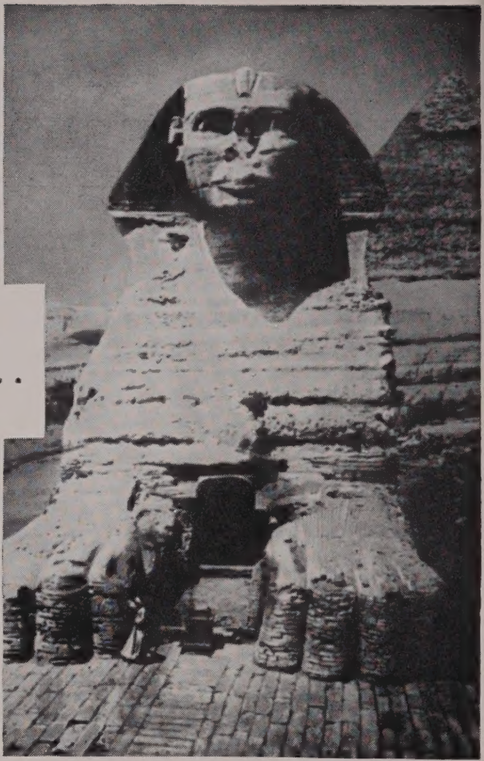

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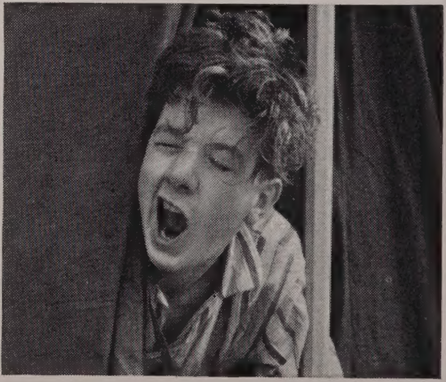

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Esparto: the Green Wealth of Algeria

by DAVID TUDOR-POLE

The world shortage of paper in relation to the increasing demand for it, and the consequent rise in its price, have drawn general attention to the sources from which it is derived. Important among these is Esparto grass, of which the writer has made a special study in its land of origin

For several thousand miles through Morocco, Algeria and Tunisia, as far as Libya, the traveller may see large tufts of reed-like grass climbing over the foothills of the Atlas Mountains or straggling along their high plateaux to the desolate fringes of the Sahara.

He may think them of little account—the sparse vegetation of an inhospitable terrain. Yet these ragged tufts, dry and withered at the edges, with grey-green shoots pushing up in the centre, have a history of over 2000 years and are today one of the most valuable uncultivated crops in the world. From them is made fine paper, including that upon which this Magazine is printed.

Esparto grass well justifies its name of *Stipa tenacissima* for its roots tenaciously grip a stony soil supporting little other vegetation. Sometimes reaching a height of three or four feet it grows wild in clusters of from two to ten feet in circumference. A variety of Esparto, the *spartum* of Pliny, was used first for ropes by Hannibal's army in his campaigns against Rome. In the Middle Ages the Spanish navy adopted such ropes because of their strength and their unique ability to float on water. More recently units of the Eighth Army used Esparto for the more domestic but none the less military purpose of stuffing paillasses.

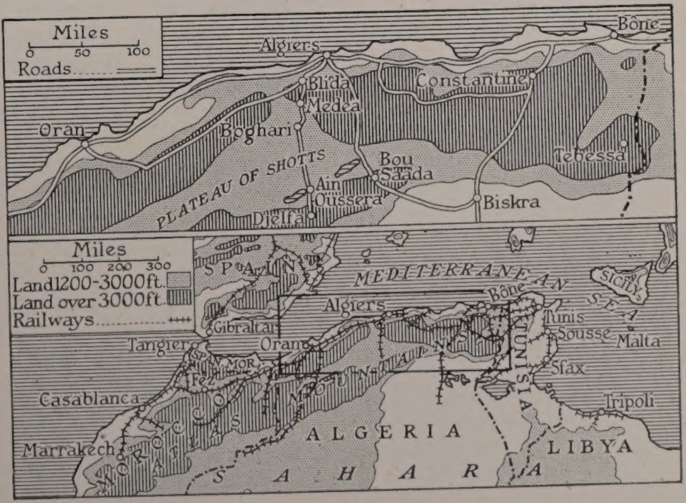
Esparto has been used for baskets, mats, in Kidderminster carpets and as a substitute for horsehair. Sandals made from it have been described as "graceful, classical, if somewhat rustic" and "very useful in hot rock and sandy soil".

But it was not until just under a century ago that the major use of *Stipa tenacissima* was discovered. It was found that the leaves contained from 35 to 40 per cent of cellulose, thus providing a new raw material for the manufacture of high-quality paper and card.

Land which was hitherto largely unproductive suddenly became valuable. The grass was introduced into Britain in 1857, and a decade later its import had become a flourishing trade. By 1896, 200,000 tons a year were being imported. In the same year Mr Charles Richards Dodge, Special Agent in charge of Fibre Investigations for the U.S. Department of Agriculture, listed it in his classic catalogue of the "1018 Useful Fibres of the World". Its presence was claimed in Greece and Ottoman Crete, but it was in Algeria that the richest preserves were located.

Today Esparto collection is an industry of considerable importance to the French economy, bringing in an annual revenue of several milliards of francs.

Its centre is Algeria where over twenty companies are now engaged in the collection of Esparto. For a recent tour I made the port and capital of Algiers my base. Here I saw thousands of tons of baled grass piled on the quaysides or being loaded onto



A. J. Thornton

grubby steamers for their journey to French or U.K. ports. The same sight meets the eye at Oran, Bône, Tunis, Sousse, Sfax or Tripoli.

Go in any southerly direction from Algiers and sooner or later you will come across wild Esparto grass. I took the main road which runs almost due south from the capital across a flat and fertile plain. As far as Blida, lying beneath an imposing curtain of mountains, one may imagine oneself in France. The metalled road is lined with trees; the fields, scrupulously cultivated, nestle between neat French farms and orchards. After Blida Africa begins. The road climbs into the mountains for several hours before descending round many spurs and detours onto the high, wide steppe which separates the northern and southern spines of the Atlas. Here, between the townlets of Medea and Boghari, the first Esparto can be seen. Half an hour after Boghari it stretches as far as the eye can travel over level horizons. This steppe or "Plateau of the Shotts"—so called from the shallow saline lakes in the region—is deceptively flat. It appears to be a plain surrounded by low hills. Only when the 'hills' are crossed does one realize they are the tops of considerable mountains.

Across this plateau the road runs in a perfectly straight line to Ain Oussera, afterwards continuing to Djelfa and the Sahara. Ain Oussera is an ancient Arab village with half-a-dozen European buildings grouped near it. It shelters one of the depots where Esparto is pressed and tied into bales ready for transport to Algiers.

Although the Algerian Esparto regions are rigidly controlled by the French equivalent of our Forestry Commission and the modern system of collection or 'centralization' of the grass is highly organized, the actual method of picking by hand is an extremely old one handed down from generation to generation.

The grass territories are public lands officially divided up into lots varying in size from five to a hundred or more square miles. The right to collect the wild grass is granted by the Government to commercial companies or associations formed for the purpose. Usually these rights are auctioned to the highest bidder for a fixed term of years.

Apart from its commercial value, however, the grass is of national importance in itself. It is the last defence against complete soil erosion and the first check to a vast northerly extension of the desert. As recently as 1000 years ago grain crops were harvested fairly extensively on the Plateau of the Shotts. Even today infrequent patches can be seen, while in eastern Algeria Roman olive groves covered lands on which Esparto is today almost the only growth. (North African soil has, however, always been poor—at any rate in historical times. We all know the saying "Africa, the granary of Rome". But this means no more than it says. At the time of the Emperors Roman Africa provided grain for half the population of Rome—about 350,000 people. The same huge area could do as much today.)

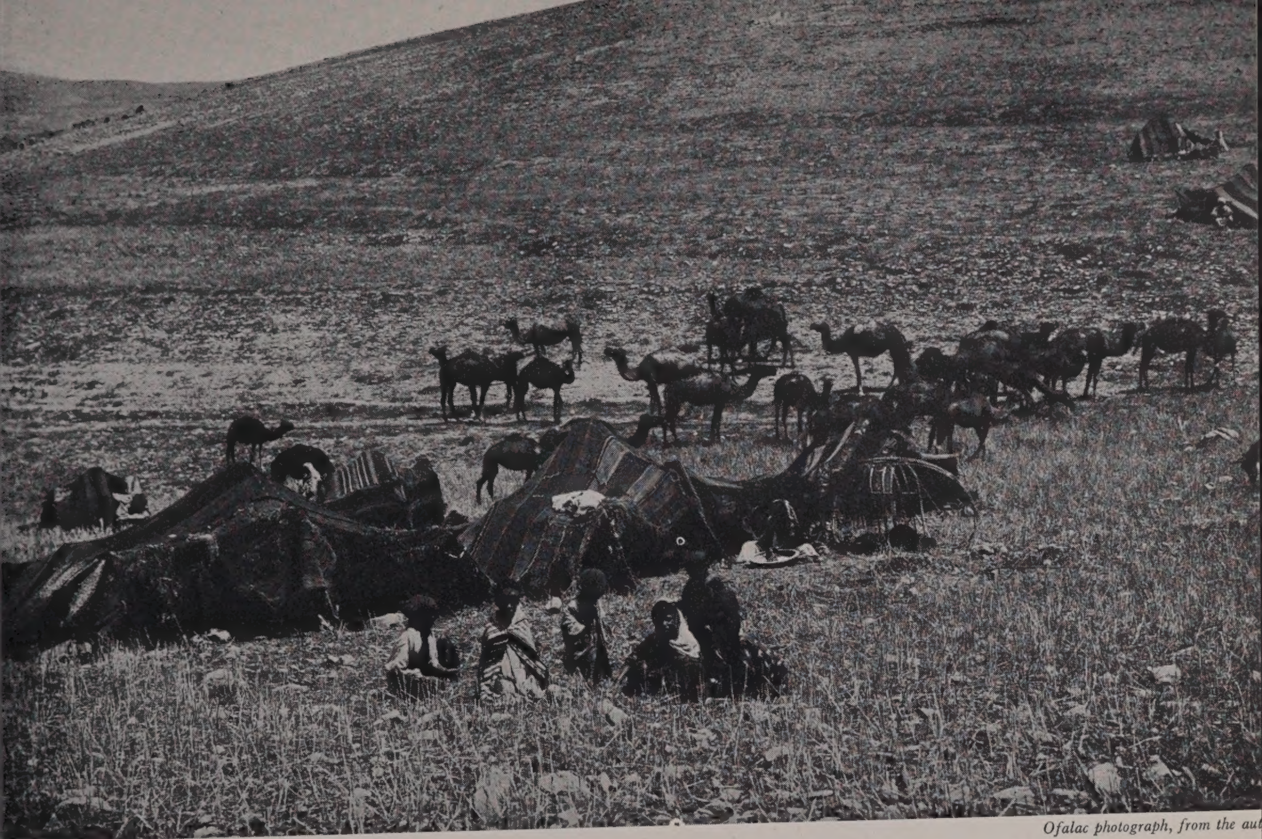
This is the reason for an efficient control by the French authorities who determine the precise quantity of grass which may be picked from each lot in any one year. Agents of the Forestry Control keep strict watch that these limits are not exceeded and any sign of deterioration is checked by complete cessation of picking.

In each lot or group of lots the company holding the grass rights establishes posts where the grass can be weighed, stacked and dried. These posts are often in the most remote places according to the lots they serve. Tracks, which must be capable of taking a twenty-ton lorry and trailer, are constructed to link them up with the nearest main road or railway where the collection depot is sited.

In the past, as the demand for Esparto grew, the early grass pioneers pushed these tracks further and further into the hinterland. Today a veritable network spreads on either side of the few main routes leading to the coast. They are useful if one knows the way, but betray the unwary traveller who may follow them for hours only to find they end abruptly—apparently nowhere and without reason.

I made long tours following these tracks from weighing-post to weighing-post and eventually crossed transversely between two major routes, arriving at the oasis resort of Bou Saada. Lacking a jeep, a Ford of 1930 vintage, its chassis high above the ground, proved adequate to negotiate the wadis and enormous pot-holes. A modern car is constantly thumping the ground.

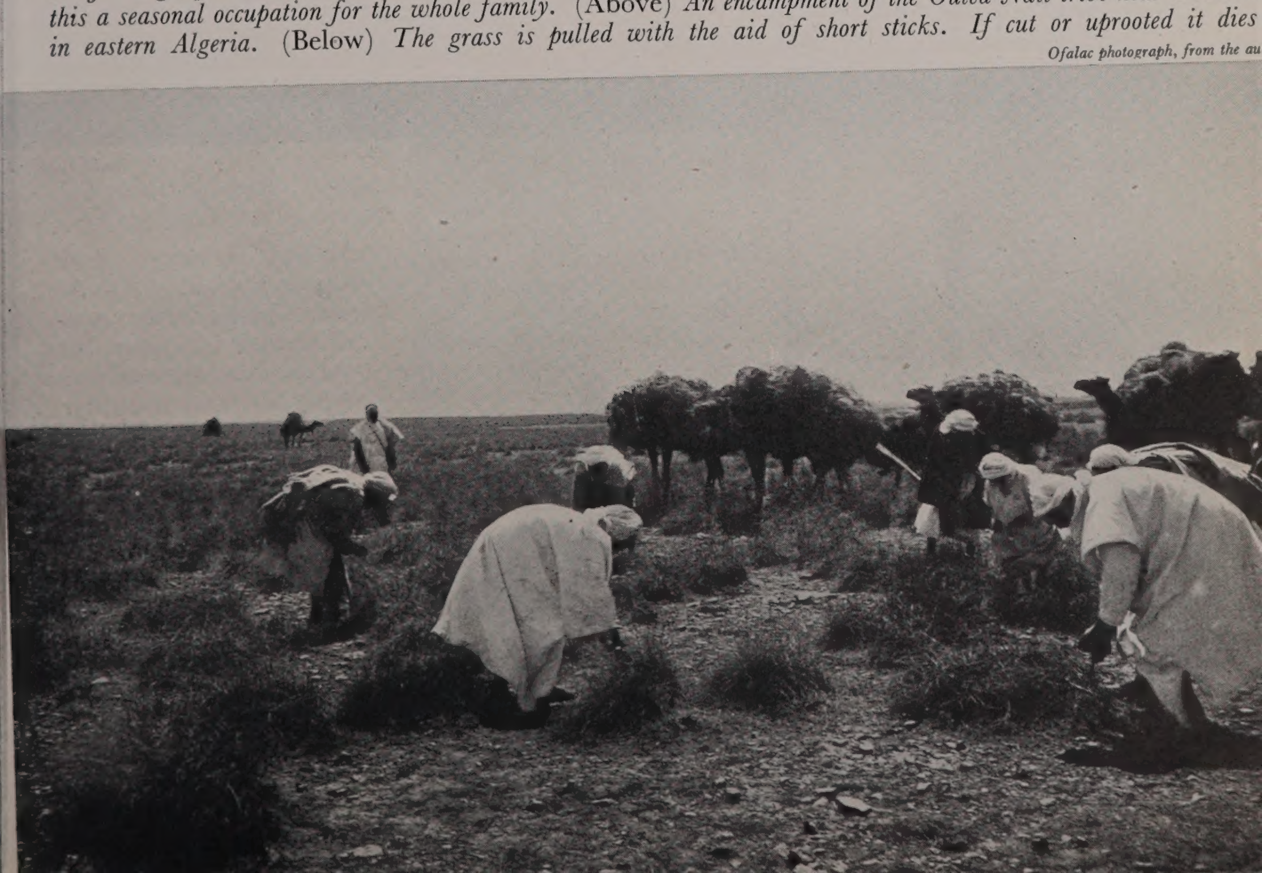
The weighing-posts look very much like groups of small haystacks. Each is in charge of an Arab buyer whose job is to buy grass (by weight), stack it, guard it and eventually load it onto the lorry sent from the collection depot. His low black tent can usually be seen not far away, a thin wisp of smoke or a shy child peering round the edge of a stack



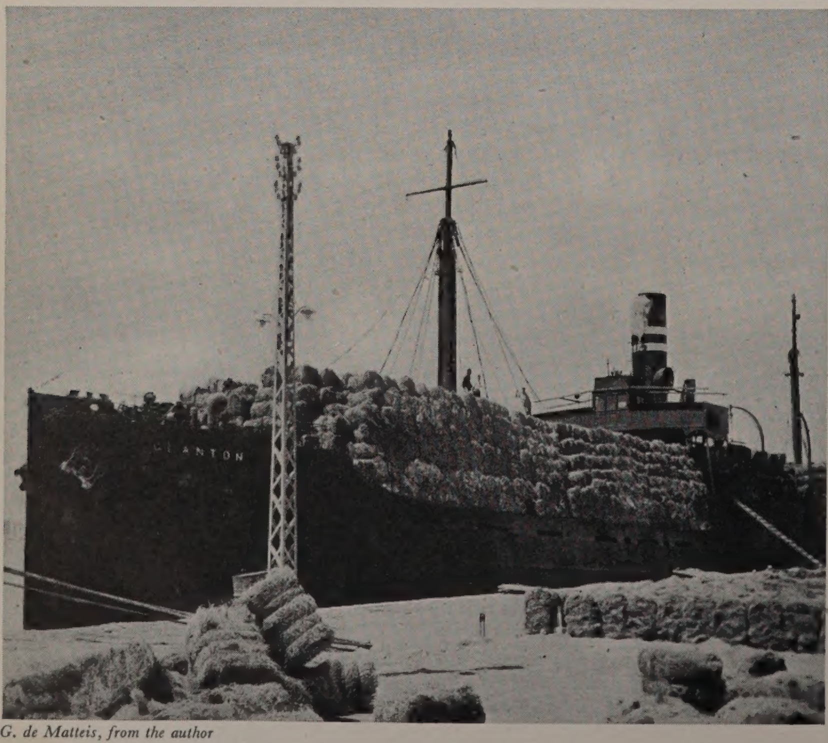
Ofalac photograph, from the au

Esparto grass grows across North Africa from Morocco to Libya and is a rich natural source of wealth in its use for high-quality paper. Every year nomads come to gather it. Like the hop-pickers of Kent, they find in this a seasonal occupation for the whole family. (Above) *An encampment of the Ouled Nail tribe near Tebessa in eastern Algeria.* (Below) *The grass is pulled with the aid of short sticks. If cut or uprooted it dies*

Ofalac photograph, from the au



David Tudor-Pole



G. de Matteis, from the author

(Above) *A nomad Arab brings in his load of Esparto grass. One day the wiry tufts will be made into paper, but to the Arab and his camel they are just the result of another day's work before the long trek home through the grasslands that stretch like a sea to the horizon on every side.* (Left) *Tightly pressed and baled, the grass is piled into open holds and stacked high on deck. Here it is being loaded at Sousse in Tunisia*

News Chronicle

Esparto grass from Tunisia being unloaded from barges below Blackfriars Bridge in London. Most of the grass that is brought to these islands, however, goes to Scotland to be made into paper

indicating the presence of his family.

The actual picking of the grass is done by the will of Allah. No Arab will consent to be *employed* for the job. For the Esparto company this is the greatest problem: shortage and difficulties of labour.

The population of these regions is very thin and very mixed. There are nomads driving camels and sheep from one meagre pasture to another, or trading between one village market and the next, Moors, Berbers and others of indefinable origin simply labelled "indigenous". But the Algerian Arab, albeit of mixed stock, has all the pride and independence of his race. If he is to pick the grass at all he will pick it and sell it as a merchant, not as an employee, and reserve always to himself the right to work, or not to work, as the case may be. It is a tricky business in which the popularity of the company concerned and of the local buyer at the weighing-post plays no small part.

Another important factor is water. No-one can be expected to work where he may have to travel twenty or thirty miles each day to the nearest well and I saw several new ones being sunk in the hope that nomads might be attracted to hitherto waterless areas.

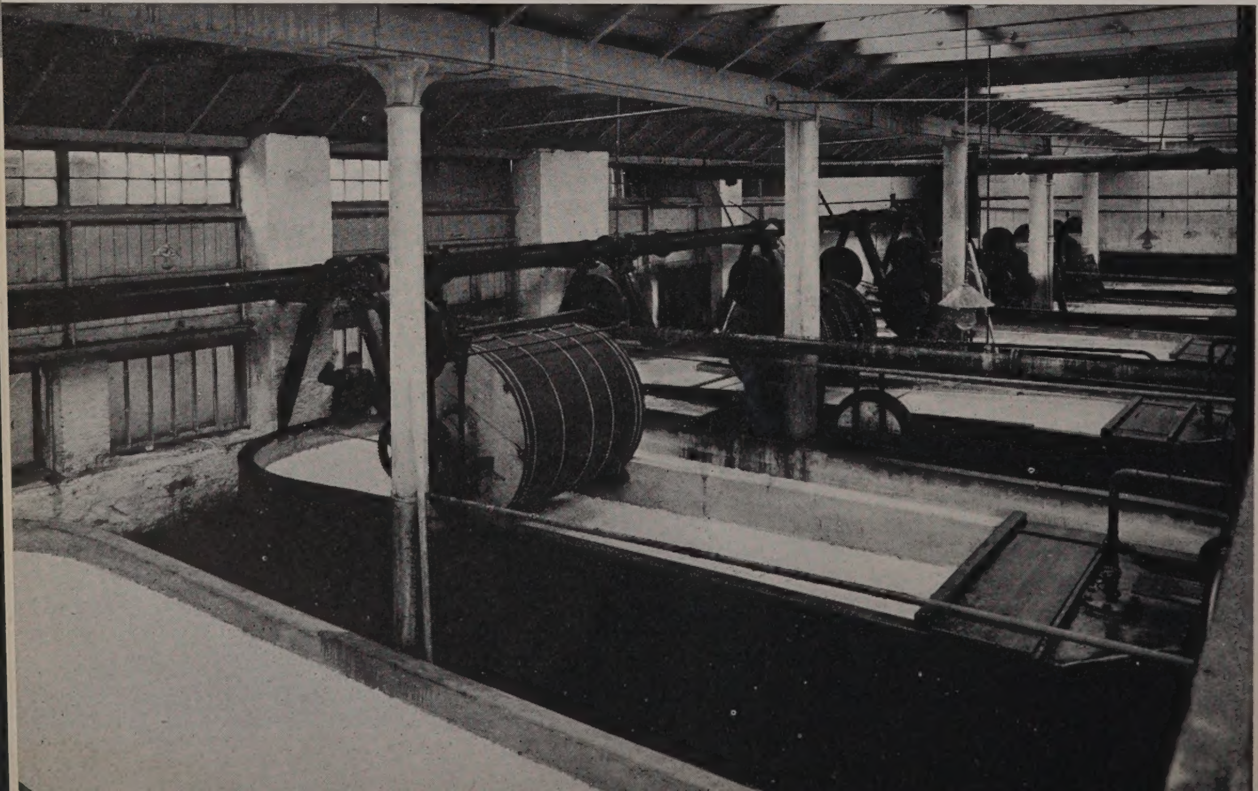
The best labourers in this region come from the Ouled Nail tribe, whose encampments are easily recognized by their gaily striped tents. This is the tribe that provides the famous dancing girls of the oasis holiday resorts—Bou Saada, Biskra and elsewhere.

The grass has to be picked so that the root is not disturbed. To achieve this the

y courtesy of Messrs Tullis, Russell & Co. Ltd

At the paper-mill the Esparto goes through complex processes evolved by modern paper-making technique: dusting, pulping, washing, bleaching and softening. (Above) *It is weighed and forked into dusters, then* (below) *the washed pulp is bleached white ready for softening, before going to the paper-making machine*

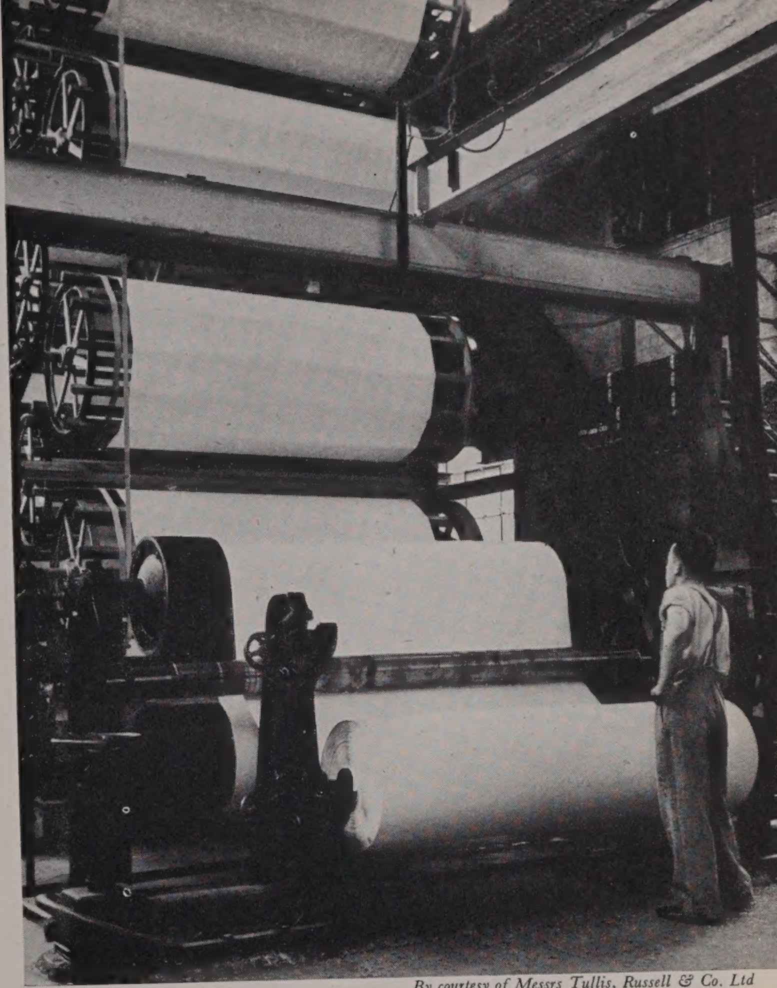
courtesy of Messrs Tullis, Russell & Co. Ltd



ancient method of 'beating' with a stick is employed. The labourer holds in his left hand a stick about eighteen inches long, grasps a handful of leaves with his right, wraps them round the stick and then jerks strongly with both hands. In this way one person can pick as much as two or even three hundredweight a day.

In the evening the result of the day's work is brought in to the post. Here, with much guttural discussion, it is carefully inspected and weighed. It should be in small bundles to facilitate later handling on its way to be baled. There must be no weeds or roots among it and it should be good grass, with stems not less than twelve inches long. The formalities completed, the labourer is either paid immediately or given a chit showing how much he has gathered. At the end of a week or fortnight he can cash in all the chits he has collected.

There is no fixed price paid for the grass. It is based upon the quintal (100 kilos) and varies according to the quality of grass in the region, the scarcity of labour and other factors. It is competitive in that it has to be sufficiently high to attract the available labour. Near Tebessa, in eastern Algeria, I found that, as much higher prices were being offered in Tunisia than those prevailing in Algeria, Esparto grass was sometimes smuggled over the frontier.



By courtesy of Messrs Tullis, Russell & Co. Ltd

The end of the story: the finished product rolls off the maturing machine, which ensures that the paper is smooth, before being cut into sheets or put onto smaller reels

This is one of the many difficulties with which the European field managers of the Esparto companies have to cope. Theirs is an interesting but often hectic career with responsibility for thousands of tons of grass over hundreds of square miles. Stationed in remote centres, their time is spent largely in the open air checking stocks, supervising labour, building and maintaining tracks, digging out foundered lorries, prospecting for new grass lands and always watching the weather, for although the grass is hardy enough whilst growing, there is much that can harm it whilst in stack or on its way to the coast: disease, must and damp. At the end of the season it is their responsibility to see that the grass is on the quayside at the coast, baled, dry and in perfect condition for the paper mills.

What of the future of this industry? The price of Esparto has more than trebled in the last three years. But its value depends always on what is—in the long run—an unstable world paper-market. There are several long-term possibilities which may affect it: developments of paper-making technique, the production of alternative synthetic materials or the discovery of better or cheaper ones elsewhere. Allied with these risks is the danger in some North African territories of over-gathering in times of excessive demand: the old, tragic story of turning productive land into semi-desert for the sake of immediate gain.

Today, however, world demand for paper is steadily tending to outstrip available known supplies of raw materials of all kinds, and the future of the Algerian Esparto industry, and with it a higher standard of living for the nomad population, promises well.

The Grand Tour

by A. N. FAIRBAIRN

The tradition of benefits and pleasures to be derived from a Continental tour took root in Britain in the 18th century and has had a permanent influence on our life. Mr Fairbairn has himself explored the routes composing the usual itinerary of the "Milords" who established that tradition, bringing to his exploration a historian's knowledge of 18th-century England. (Left) *A portrait by Rosalba Carriera of Horace Walpole. It was painted in Venice in 1741, while he was making the Grand Tour with Thomas Gray, the poet*

By courtesy of Lord Walpole

The first allusion to the "Grand Tour of France and the Giro of Italy" appeared in 1670, but the concept of it was Elizabethan. From Tudor times three types of people made their way to Europe, stimulated by different circumstances, but all conspiring to develop and influence that phenomenon which by the 17th century became known as the Grand Tour. First the end of the Wars of the Roses and the gradual achievement of law and order under the strong Tudor monarchy sent a mass of out-of-pocket gallants into Europe as travellers and mercenaries. Next the development of the printing press and the arrival of Renaissance learning from Italy encouraged more students to travel. Thirdly the evolution of a rich and stable monarchy helped to create a class of professional statesmen and diplomats.

At a time when the need of the rapidly rising kingdom for able representatives was increasing, it was the deliberate policy of Cecil, the Queen's great minister, to create a class of professional diplomats. These young men were exhorted to consort only with "secretaries and employed men of ambassadors, for in so travelling they shall suck the experience of many". But such far-sighted men feared the effect of foreign travel on their sons' characters. Thomas Cecil dubbed his "a spending sot, meet only to keep a tennis-court", and the saying "*Inglese Italianato, Diavolo incarnato*" fitted many who became too enamoured of foreign ways.

As the 17th century wore on increasing numbers of potential diplomats, men becoming rich through England's growing foreign trade and scholars in search of European learning, began to legitimize the gallants' jaunts which thus imperceptibly merged into

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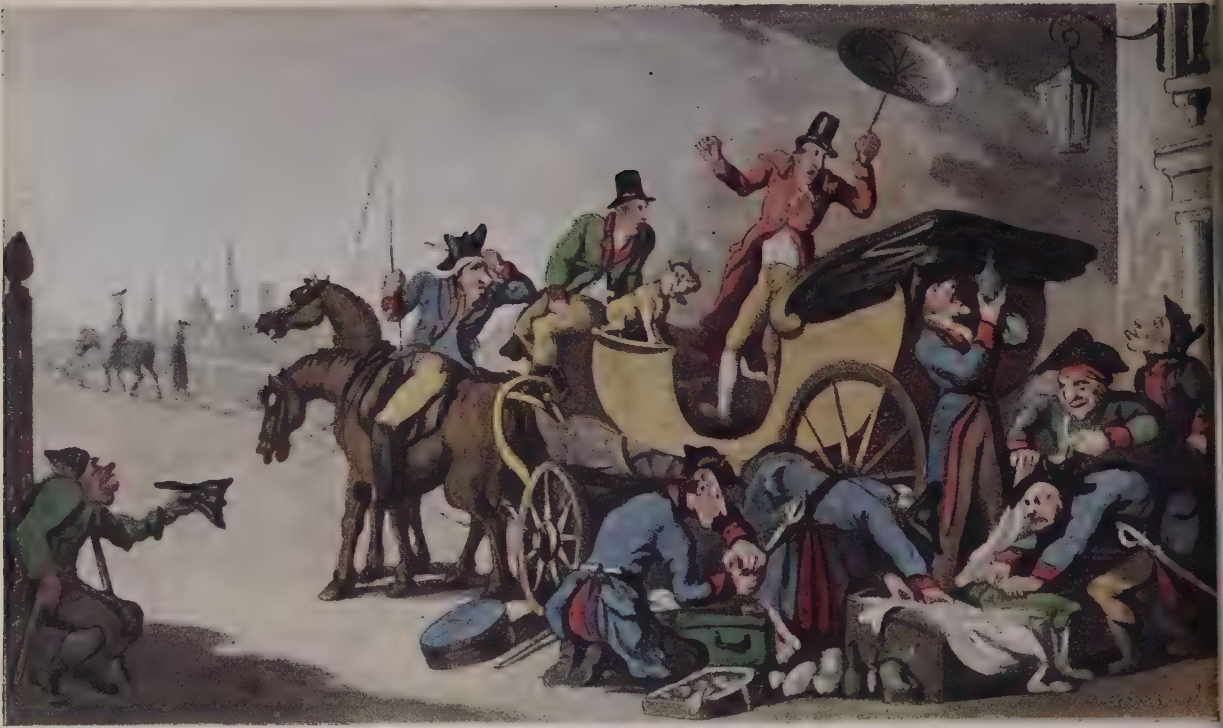
The Grand Tourists' first sight of foreign soil: Calais Harbour, as depicted by Thomas Sewell Robins. After a crossing that must have been far from comfortable, carriages were unloaded or hired and the tourists set off on the long trip to Paris, the first stage in their three-year journey

the educative and political institution known as the Grand Tour. More sober types of traveller like John Milton and Evelyn, the diarist, were appearing. Contemporary primers at the end of the 17th century contained detailed accounts of how a gentleman should comport himself and what accomplishments he should acquire by travel. The latter included dancing, fencing and riding, medicine, science, mathematics, Civil Law and Art. John Gailhard's *Compleat Gentleman* (1678) laid down as customary that the Tour should last three years, the first eighteen months should be spent in France, the next nine to ten in Italy, then five for Germany and the Low Countries, and in conclusion a four months' stay in Paris. By the 18th century the wealthy classes of Europe were able to mix easily in each other's capitals and society. Arthur Young remarked that Europe was "now so assimilated that the mode of living of those of £15,000 a year and over is the same throughout".

The popularity of the Grand Tour reached a peak after the Seven Years' War when much pent-up desire to travel was released. Horace Walpole estimated that 40,000 people passed through Calais between 1763-65, and in 1785 alone Gibbon was told that the same number were touring or resident on the continent.

By the time the Tour had become conventionalized and regulated it had also assumed a generally accepted itinerary. The first and the last ditch to negotiate was the Channel, and though most travellers mentioned it, none was more graphic than an anonymous Elizabethan: "O my friends: o thrice and foure times blessed are those who are on firme land setting of a dish of beanes . . . Dish, dash, clash, crack, rick-rack, thwack, bounce, flounce, rounce, hizze, pizze, whizze, souze . . ." It was never a pleasure cruise. Various cures were recommended including one curious one: "a bag stuffed with bay salt, beaten small and applied to the stomach, or better still a piece of fresh earth kept night and day under the nose". The customary charge from Dover to Calais in the 18th century was 10s. 6d. for a gentleman and 5s. for his servant. A moderate amount



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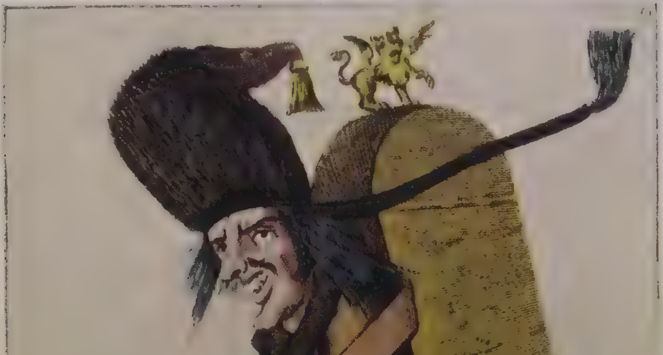

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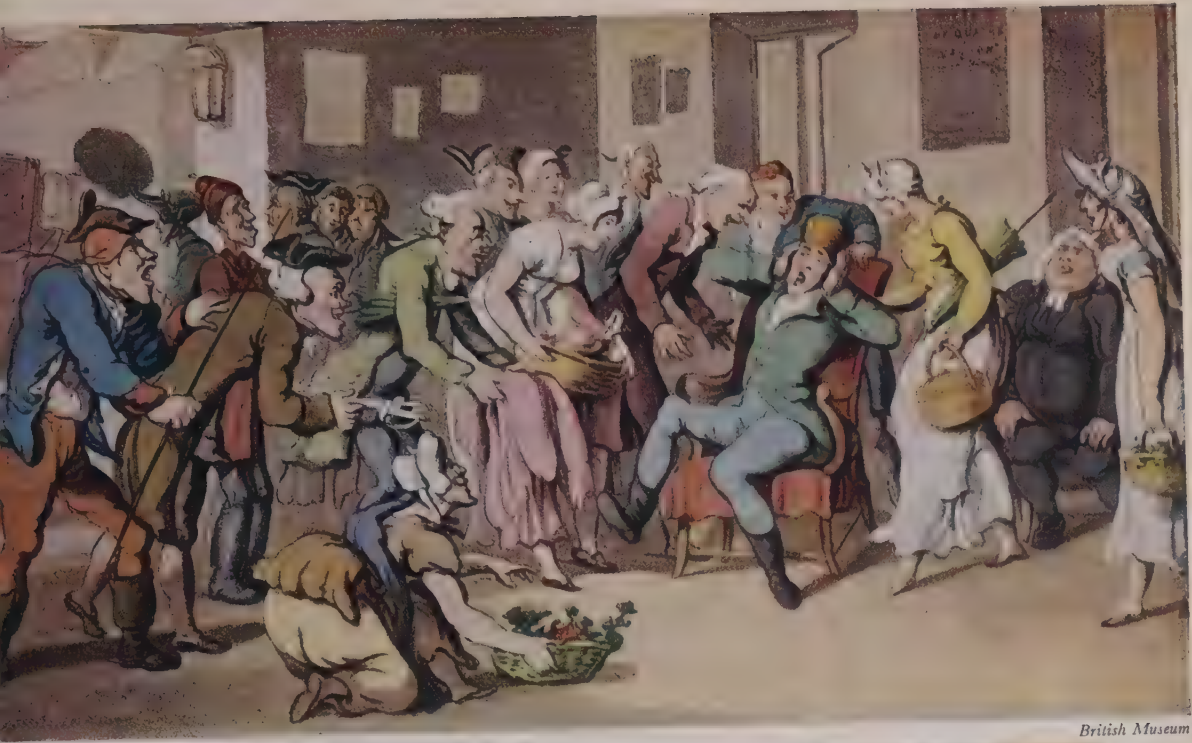
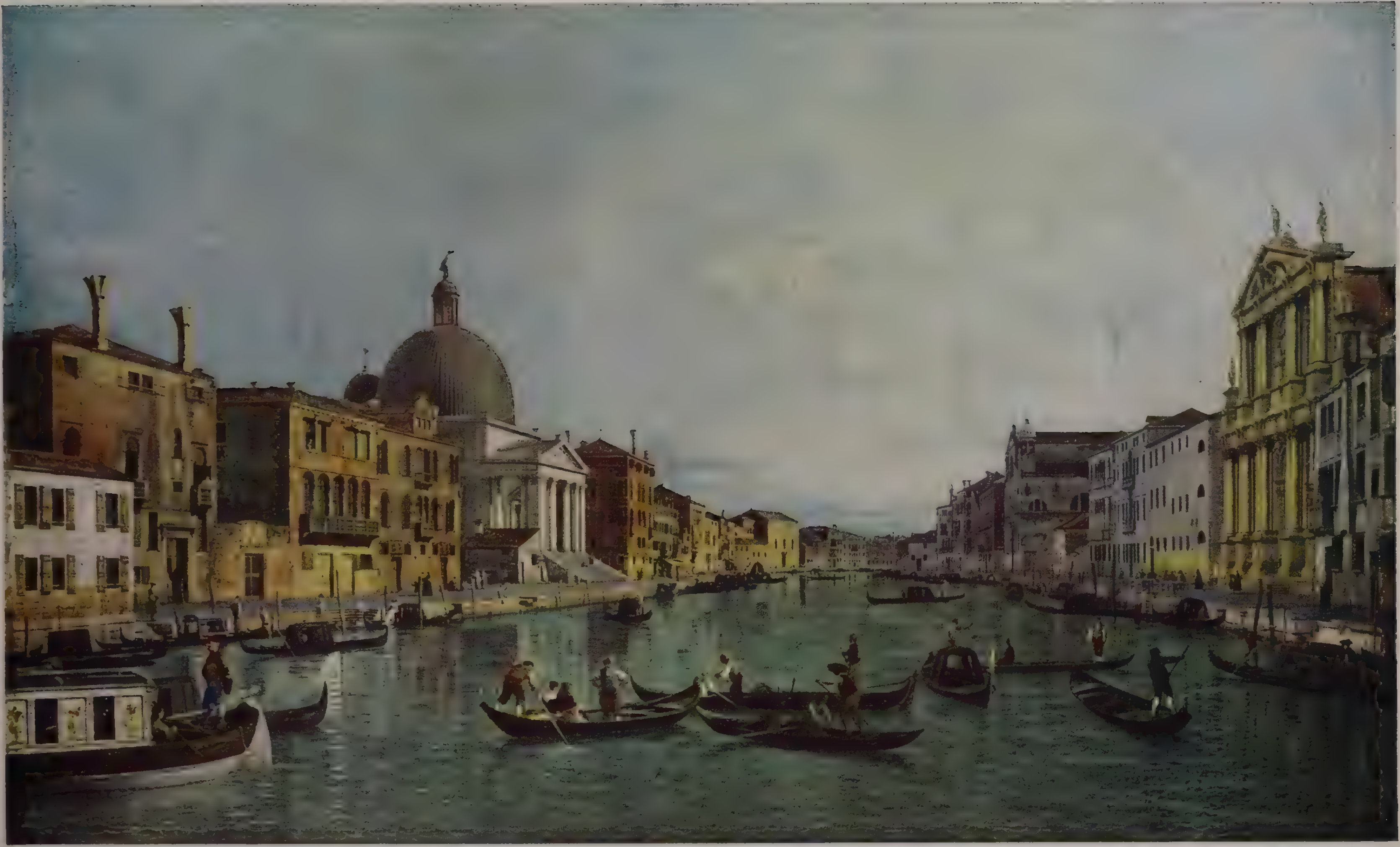
The habitual chaos of a Customs inspection was a new experience for the Grand Tourists, unused to foreign travel and foreign habits. Bewildered by language difficulties and bemused by the oddities of a strange country, their first impressions can be more easily imagined when seen through the eyes of a Rowlandson or Bunbury. (Above) "*Searched by the Douaniers on the French frontier*" *by Thomas Rowlandson and* (left) "*French Lemonade Merchant*" *by A. W. Bunbury, are graphic examples of these 18th-century travellers' observations*



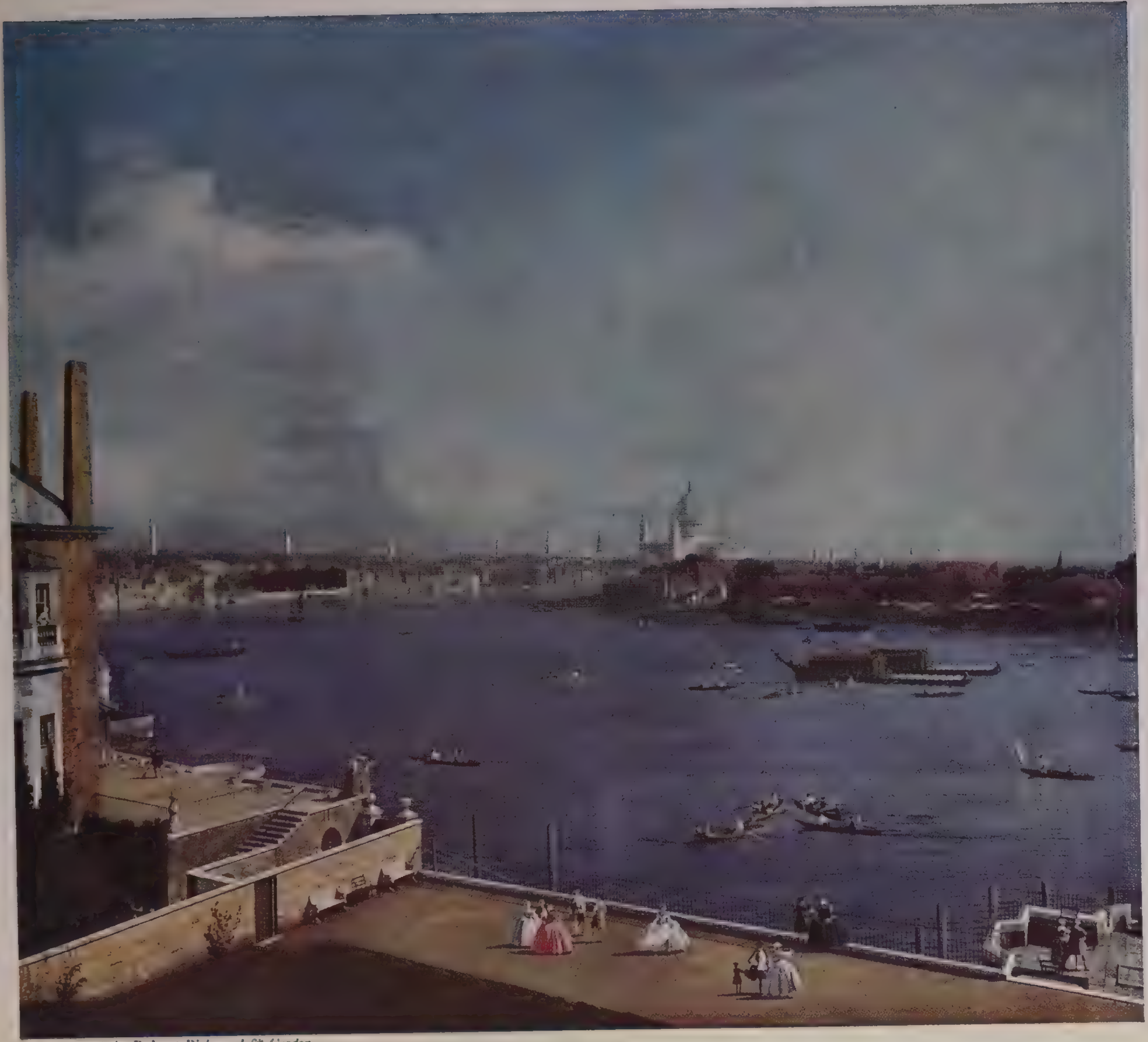
British Museum

But worse was to come. Rowlandson's "Arrival in Paris" shows (above) *a scene that was if possible even more terrifying. The rich Milords were assailed by every merchant and mountebank in town, each of whom was out to fleece them. Beggars were so common in France that one traveller remarked that Lyons was the only town free from them. But it was all interesting in spite of the squalor and the noise: there were new characters and remarkable costumes to be seen everywhere.* (Right) *Another Bunbury satire: "The Dog Barber"*

British Museum



National Gallery



By courtesy of the Duke of Richmond & Gordon

The Grand Tourists brought back from Italy such a wealth of fresh ideas and objets d'art*—collections of statuary, furnishings, pictures, and designs for houses to hold these treasures—that the face of 18th-century England was entirely changed through their influence. Supplying* souvenirs de voyage *became a very profitable business: painters like Canaletto kept a large studio full of assistants producing the scenes that "30,000 pink-cheeked Englishmen" wished to take home with them. Counterparts of his "Grand Canal in Venice"* (opposite)*—mostly by his 'school'—are found in large numbers in country houses throughout the British Isles. Then the War of the Austrian Succession cut off the flow of patrons from Venice and Canaletto came to England. The fresh impulse that this change of atmosphere gave to the quality of his work is shown by* (left) *the view of the Thames from Richmond House, done for the Duke of Richmond, his first patron in England* of luggage was taken since it later had to be man-handled over the Alps. The French customs were tiresome, levying 5 per cent on all bed and table linen.

Calais was generally acclaimed "an old and pretty town", whilst Boulogne, well-built and spacious, was the home of a considerable colony of English bankrupts. The 183 miles from Calais to Paris were covered in 54 hours by the diligence over roads excellently maintained by the forced labour of neighbouring peasants. Once in Paris the visitor promenaded the Tuileries Gardens, bought mementoes at Notre-Dame and inevitably made a trip to Versailles. Opinions about the latter varied; to some the palace was dismal, to others too rich in decoration, but to Horace Walpole it was "a lumber of littleness"!

From Paris the road to Italy lay through Dijon, Lyons and over the Alps to Turin. Dijon impressed by its beautiful churches and convents. Lyons, a great trading centre and a hive of industry, was always quoted patronizingly by 18th-century merchant travellers as an example for the rest of France. One visitor, Thomas Pennant the 18th-century naturalist, observed that it was the only French town having no beggars. A few travellers made their way down the Rhône to the Riviera, but it was little known except to invalids, and the modern resorts were mere fishing villages. Guide-books warned that the roads and inns were bad, and this generally kept the majority of travellers away.

The most popular route from Lyons to Italy lay through Geneva and over Mont Cenis. From Geneva many travellers planned to visit Voltaire at Ferney; the great man encouraged his English visitors, and it became a customary pastime for them to make a pilgrimage thither during the mid-18th century. Pennant gave a good account of his visit: Voltaire was in a good temper and addressed him in English, of which the only words he seemed to remember were

From Italy the Grand Tourists returned by way of Germany and the Low Countries, via Switzerland; the latter only became popular and mountains ceased to be feared in the second half of the 18th century. Prints like this, of the Rhine near Schaffhausen, were precursors of picture postcards

Iris Verlag

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Although the Low Countries did not influence travellers as France and Italy did, they held much to interest and astonish. Not grand landscape or architecture, perhaps, but lively scenes and incidents to delight Rowlandson's heart, such as his "Place de Meir, Antwerp", reproduced above

oaths: "By G—— I do lov de Ingles G—d dammee, if I don't lov them bettre than de French by G——".

Until 1763 Switzerland was not extensively visited; climbing the glaciers had not been introduced and the Alps were viewed simply as a very unnecessary stage in the journey to Italy. William Windham's expedition to Chamonix in 1741 and his subsequent paper to the Royal Society set the fashion of visiting the Savoy glaciers, and by 1780 there were as many as thirty visitors daily to the Temple of Nature above Chamonix. The Alpine scenery was not appreciated, for the travellers were more absorbed in protecting themselves against the cold and surmounting the "uncouth rocks".

Turin was the first large Italian city the traveller reached. It was not impressive in itself, but the Carnival which lasted from Christmas to Ash Wednesday must have provided a roistering endurance test, for as Thomas Gray the poet put it, "one half of the remaining part of the year is passed in remembering the last, the other in expecting the future Carnival". The poverty of the local Piedmontese *noblesse* was zealously remarked by Smollett who quoted the rusticated noble's enquiry to his son in the evening: "*Chevalier, as-tu donné à manger aux cochons?*" To the south lay Genoa, "*La Superba*", whose splendid palaces and picturesque terracing ringed a beautiful harbour. On the northern route the English crowded into Milan visiting the Court, La Scala and the cathedral. Further south Bologna was seldom noted except as a "celebrated mart of lap-dogs and sausages". At Pisa visitors wondered at and speculated on the Campanile; Horace Walpole took disdainful exception to its "crooked tower and conundrum staircase".

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A water-colour of Innsbruck by Clarkson Stanfield. Grand Tourists who braved the Brenner on their way to Munich must have viewed the town with relief after negotiating the Alps

Before reaching Rome, Florence was of the greatest interest to the Grand Tourist. Here the famous Medici collection was much admired; one connoisseur remarked: "I am far gone in medals, lamps, idols, prints . . . I would buy the Coliseum if I could". But on the whole the English were not discerning connoisseurs, and a vast amount of fake antiques and pictures were foisted on the unsuspecting to adorn their newly built country houses at home. Rome was the turning point of the Tour. Its antiquities interested the classically educated English, as did the brilliant religious processions, and the progresses and elections of Popes. Many were amazed at the beauty of St Peter's, whilst others deplored the depredations made on ancient monuments for local building purposes—a practice only stopped in the 19th century. Some would spend a few weeks at Naples, and in the late 18th century the city was a necessary 'rounding off', especially after the unearthing of Pompeii.

On the return journey the route lay *via* Florence and Venice. This was still an independent state in the 18th century, with territories in Dalmatia and Greece, and the visitor was struck by the Oriental atmosphere of its streets and the gay costumes of the merchants from the Balkans and Levant. Venice was a great favourite with the Whig nobility. In its aristocratic republican constitution the noble tourist saw the ideal for which he longed at home. Nearly 30,000 pink-cheeked young Englishmen visited the republic annually at the height of its fame in the 18th century and thus contributed a substantial part of its revenue. Venetians were always notorious for their graceful methods of fleecing the tourists. Most large English country houses contained some Venetian paintings. Canaletto (1697-1768) indirectly owed his international fame to English patronage. Some of the richer tourists took artists with them in their retinue, amongst them being J. R. Cozens who travelled with the eccentric William Beckford.

After Venice most travellers returned by Genoa, thence by sea to Marseilles and up the Rhône Valley to Paris and Calais. But a hardy handful passed over the Brenner into Germany and the Low Countries. The German roads were bad, conveyances were more like "hurdles than post-chaises" and the customs barriers of the innumerable states were a great nuisance; also the inns were dirty and very dear. Over the Brenner the first place of interest was Munich, with its splendid Electoral Palace and public buildings. At Stuttgart several quaint customs delighted the traveller: a serving-maid with a lanthorn accompanied the family party home from the theatre, babies were still tied up "porpoise-fashion", and deaths were announced with a "psalmody of wind instruments" from the church tower. At Heidelberg the long-haired students were noted for their hilarious antics and capacity for beer. Thence on to the most comfortable part of the German circuit, the voyage on the Rhine with its island castles, rugged gorges and excellent inns.

After the Rhineland the traveller made his way *via* Nijmegen to Leyden and Amsterdam. Amsterdam had been killed commercially by the rise of London, and in the 18th century presented a sorry sight with its stagnating canals. Leyden, besides its University, exhibited the following alliterative curiosities, much patronised by the credulous English: "the skin of a Scotchman dried, the rib of a rinocero, the feather of a phoenix, the teeth of a fish called pot, the head of a hippopotamie and a cat with wings"!

Alternatively the visitor might take in Spa, the fashionable resort within the territory of the Bishop of Liège, before going on to Brussels and the Channel. At Calais he awaited the packet-boat. He supervised the loading of his carriage, if it was not hired, and left his luggage to a courier; and as a modern writer put it, "his conversation manual would tell him how to be sick in four languages, but the Grand Tour was ended".

From a detailed study of the personal records of the English making the Grand Tour in the 18th century several general conclusions may be drawn. The cuisine was universally praised. The antiquities drew unstinted admiration. The poverty and squalor of the poor was generally unnoticed. Local dress and costume were applauded; Arthur Young travelling in France in 1789 noted the flat round caps and loose breeches of the inhabitants of the Pyrenees, adding, "Pipers, blue bonnets and oatmeal are found in Catalonia, Auvergne and Swabia as well as in Lochaber". Thomas Pennant noted the Swiss girls "decked out in their small hats with ribbands, and their hair plaited". The condition of European inns with a few exceptions was deplored by most writers. The less frequented ones were "mostly terrible places". Service was ungracious and slothful: Young relates how at Béziers a servant waited on him "without shoes and stockings, exquisitely ugly and diffusing odours not of roses". The only saving graces of foreign accommodation, apart from the excellent cuisine, were the beds whose sheets, unlike those of English inns, never needed airing. Finally the question of fashion claimed a large part of the Englishman's attention abroad. Italy, and later France, were the arbiters of taste, and the great nobles of the 18th century accepted their elegant and graceful standards. Foreign tailors performed wonders with English dress. It was indispensable for men of any rank at all to dress above the habits of the "meer bourgeois".

The Napoleonic Wars broke the continuity, and thereafter the old order of things changed: the Tour had become overnight the memory of a dying generation. Then again a new type of traveller was emerging with specific reasons for travel: to study agriculture, botany or art.

The effects of the Grand Tour on the culture and foreign policy of Britain were immediate and far-reaching. The paintings of Reynolds and other contemporaries reflected the influence of France and particularly Italy, as did the colonnaded and porticoed mansions of the age. With the growth of a wealthy, proud and cultured aristocracy, decoration in art and architecture flourished under the twin stimuli of riches and the Latin influences acquired on the Tour, as did embellishments and refinements of detail in ceilings, fireplaces, furniture and metal work. The Tour was an education in elegance, an indispensable finishing-school for the aristocracy. Some of the young men were weaker vessels than others. Indeed many only learnt foreign fashions, a fastidious accent and an affected manner. But on the whole the 18th-century gentry made a conscious effort to throw off the rustic brutishness of their 16th- and 17th-century forbears. These new social developments gave rise to a new refinement at home that reflected the polished manners and taste the Grand Tour had taught the tourists abroad and which was shown in the need for a Beau Nash at Bath.

The general impression left by the travelling British in Europe lasted from the spacious days of the 18th century until the present. Until recent times tourists from this country have given much the same idea of generosity and liberality to all they met *en route* and the legend of the fabulously rich "Milords" had far from disappeared abroad. They grumbled at the accommodation but were fleeced with the same smile on their face as formerly. Though the aristocratic composition of the travelling public dwindled through the 19th and 20th centuries, their great tradition of travel has survived, and, becoming increasingly popular, permeates every section of the community today.

Afghan Hospitality

by DONALD HOFFORD

The author left Oxford in August 1949 intending to return after a climbing holiday in the Atlas Mountains. Eight months later, however, he and his companion found themselves on the Afghan border having come overland all the way from Morocco, still unable to exorcize the spell of the sun

Afghanistan, which has an area roughly equal to that of France and a population of about 12,000,000, has few towns or roads. The mountainous heart of the country has none of the former and only one motorable road, connecting Kabul with the North. Encircling this heart, however, there is a road which connects the four main towns—Herat, Kandahar, Kabul and Mazar-i-Sharif.

We, who were nearing the end of our journey overland to India, knew all this before setting foot across the frontier from Persia. And we were prepared for the suspicion with which we thought our plans would be received when we announced them in Herat, the western capital of Afghanistan. Rather than suffer three days of punishment in a bus going to Kandahar, and thence to Kabul, we had determined to go by the direct route. This simply meant following the Hari Rud upwards and eastwards to its source, and then crossing the knot of mountains which lay beyond. (The fascinating shade of purple, in which this area was depicted on our aeronautical maps, had something to do with this choice of routes.) Kabul was a little more than 500 miles away, and we hoped that our feet would get us there within a month.

In the darkness outside the mail-bus we could make out the black forms of the ancient minarets which line the road into Herat. The streets, whose only illumination was the oil-lamps set at intervals on the ground, were deserted except for a solitary policeman. Without any instructions from us the driver set us down at the entrance to the Park Hotel, a surprisingly modern building, where we stayed the night. It had an atmosphere of comfort and cleanliness which we had never expected—and our bill for food and lodging came to the ridiculous sum of three shillings.

In the morning we set about our business, well prepared for the battles with officialdom which our experience in countries of the Middle East had led us to expect. Our passports were removed for police examination and we felt ourselves on familiar ground. Our requests to see the governor of the province were courteously refused. Our attempts to find him for ourselves were foiled by the shadowing tactics of the hotel-manager. We were, therefore, in a suitably ugly frame of mind when a man came up to us and introduced himself as the Director of Foreign Work. He told us that though the governor could not be approached personally, he would be willing to attend to any problems that we might have. We informed him of our plans, and went off to explore the bazaars, slightly perturbed by the nonchalance with which he had received them. We learnt afterwards of a German who had made this journey, but at the time we felt that we were about to break new ground. After a lunch of *kababs* and *faluda* (iced spaghetti, or spaghetti ice-cream), we returned to learn the worst.

On arriving back at the hotel we were met by the manager who returned our passports and told us that we had been allowed to set off on the route we had chosen, unorthodox though it was. He then presented us with a letter written in Persian and signed by Wali Abdullah Khan, the Governor-General of Herat Province. This was to the effect that we were English, that we were the guests of the Afghan Government, and that all the laws of hospitality should be enforced wherever we went. Mystified and taken aback as we were by this gesture, our ignorance of the customs of the country prevented us from being fully aware of the enormous effects such a letter would have on those to whom it was presented. It was not till later that we realized how much more than a mere gesture it was. We were also to discover how unnecessary were the stores of rice and flour we had bought in Herat.

We spent another night at the hotel, and were not allowed to pay—owing, presumably, to our altered status. We felt this to be highly paradoxical, but could make the manager accept no more than the cost of our bread and *mast* (yoghurt) supper. In the morning we began the journey eastwards to Kabul—it was to take us exactly a month—accompanied for the first six miles by a soldier pushing a bicycle. He showed us where our track branched off the road to the North.

All photographs by the author

Herat, the western capital of Afghanistan, was the start of a journey to Kabul made, mainly on foot and on horseback, by the author and a friend. (Above) *Herat's red mud fort symbolizes a still surviving feudalism.* (Below) *Firewood is brought by camels across the plain separating Herat from the mountains*

Openhanded hospitality was encountered throughout the journey from Herat to Kabul, with a single exception: at Aliabad the travellers were kept in a small dark room (entrance above*) until the arrival of someone able to read their letter of introduction; whereupon their status rapidly changed from captivity to guesthood. At Zamanabad* (below) *they tried, after tea, to repay some of the* khan's *kindness by repairing his binoculars*

We were beginning to feel the weight of our rucksacks—and the awkwardness of our sleeping-bags tied on top—as we struck across the plain that separates Herat from the mountains.

The first village we reached—Palpiri—provided the inhabitants with a hitherto unexperienced entertainment and us with a foretaste of how we would be treated in the following weeks. Bearded themselves, they appreciated ours. Men, obviously, but might we not be *mullahs*? No? Well, Russians perhaps? At which we produced our letter, and watched its effects for the first time. The sour milk which we had been given was replaced by some fresh creamy *mast*, and more room was made for us on the mud platform in front of the elder's house. We continued to munch the bread we had brought with us from Herat, while the weight of our rucksacks was tried, my Highland dirk admired and coveted, and our scanty knowledge of Persian strained to bursting-point. A young stalwart produced a small round tin from the folds of his turban, and offered me a pinch of green snuff-like powder which, following his example, I put under my tongue. It had a pleasantly bitter taste, but I suffered some embarrassment a moment later when I was told, and painfully realized, that it was not to be swallowed. A jet of green fluid accompanied the roars of laughter of our spectators. We had passed the test and were allowed to proceed on our way.

Our packs felt enormously heavy after we had gone for some way, and, with Herat only fourteen miles behind us, we decided to camp on the sandy banks of one of the channels of a river flowing down from the north. Two blanketfuls of thorn provided us with enough fuel to boil a pot of rice and a kettle of tea, but the former had to be lubricated with syrup, to mitigate the effects of bad cooking. A howling gale forced us to crawl into our sleeping-bags while it was still daylight, and our last thoughts were of the vast clouds piled up ominously to the north, threatening to make us abandon our exposed position.

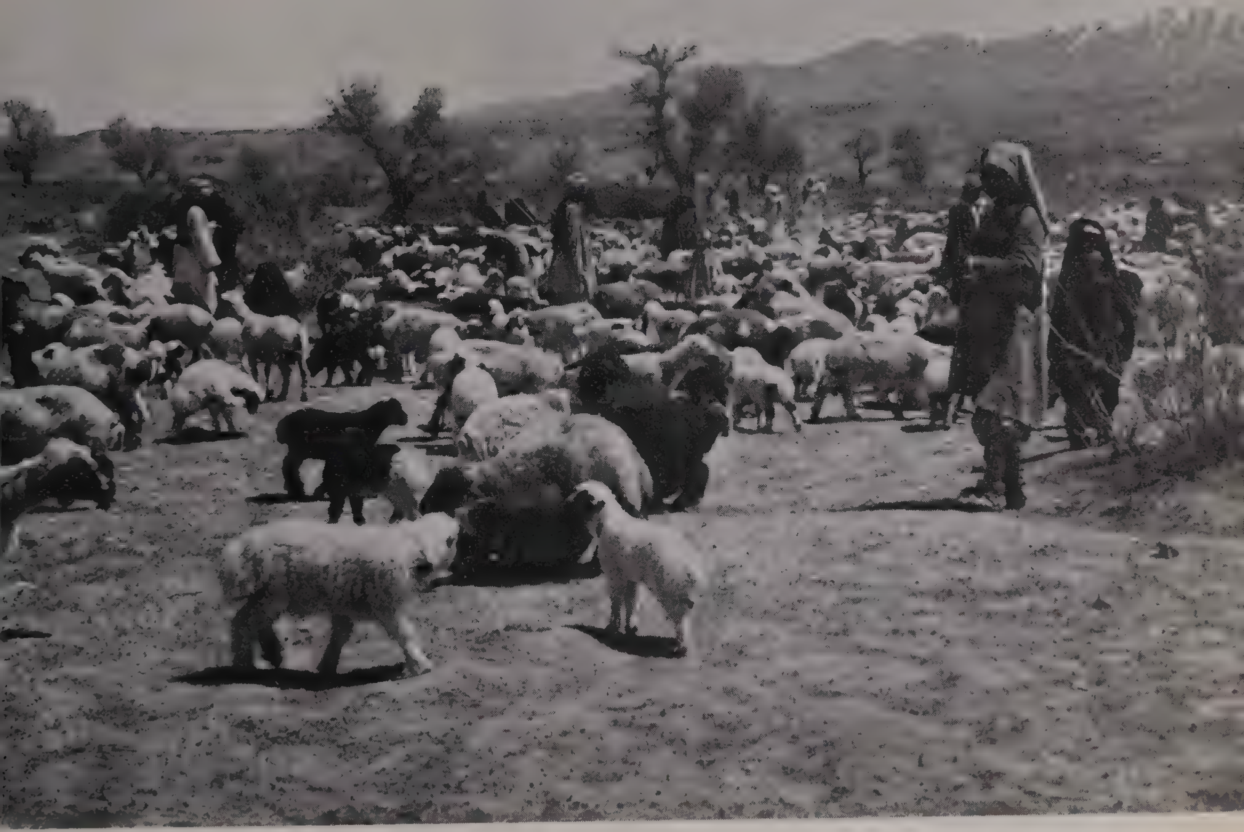
We were lucky. There was no rain, and there was enough thorn left to boil a kettle before setting off in the morning. Three hours later, after crossing the remainder of the plain to the broad mouth of the valley of the Hari Rud, we had our first and only unpleasant experience at the hands of the Afghans. A curious group of cultivators had gathered to watch us eat our lunchtime chocolate (R.A.F. emergency rations unearthed in the bazaars of Baghdad); whether it was due to the unpleasant taste of the chocolate or to our strange appearance (bare heads and battledresses), it was their unanimous opinion that we should go no further. After various ruses had failed, we decided to accompany them to their village—Aliabad—and managed to save a certain amount of face by inflicting upon them the burden of our packs.

After crossing a gentian-covered field, we were escorted to a small dark room within the walls of the village. A carpet was spread and we sat to await the arrival of the *khan* (headman) or, as it turned out, his deputy. The group at the door moved aside to make way for him, and he sat down on our left, after throwing us a non-committal greeting. As soon as he had read our letter—none of the others had been able to do so—there was a noticeable change in the atmosphere around us. We had been promoted from the status of captives to that of guests. It struck me then how much more efficient and economical the Afghan attitude to aliens was than that adopted by the West. Where everyone is a potential policeman, an undesirable foreigner is not likely to get far; at the same time, where everyone is a potential host—from the khans down to the humblest peasants—the sympathetic foreigner will be treated royally, as we were.

After drinking innumerable cups of tea—it took us an uncomfortably long time to discover that the only way to refuse more was to invert the bowl in its saucer—we metaphorically joined in the conversation, and found ourselves staying the night. Outwardly protesting that we couldn't burden them with our company, but secretly exulting in the thought that our weight-lifting for the day was over, we accepted their invitation. Contrary to the custom in Persia, we were given a room to ourselves.

The next day found us with a guide or, less euphemistically, an escort. The road skirted fields of fresh green wheat, irrigated by the diversion of streams pouring down from the mountains on our left. Cultivators, their legs glistening with wet mud, were hurriedly opening up channels, and damming others.. At Yussufabad—a walled village, with a square surrounded by domed houses which formed part of the walls—we were greeted by the khan, a large man with the face of an eagle. He grasped our hands with both of his, and led us to a baked-mud platform where a carpet was spread. There, in the spring sun, we were once more being regaled with bowls of green sugarless tea, before

(Above) *The only stretch of the journey made by "machine" was from Zamanabad to Obeh, thirty miles away. During it, punctually at sunset, the lorry's passengers leapt out and prostrated themselves towards Mecca.* (Below) *The single street of Obeh, where the motorable road ends, appears to be as full of horses as men*



After Obeh the author and his companion, travelling once more on foot, but with a pony for their packs, passed the nomadic Kutchi tribes on their slow Spring migration in search of pasture on higher ground for their flocks of sheep and goats. Womenfolk and tents are carried on camels

settling down to the more strenuous business of the midday meal. This consisted, as usual, of bread and *mast*. The creamy state of the latter made its conveyance, on a piece of bread, from the bowl in the centre to one's mouth, a very hazardous operation. I could feel the eyes of the khan, who was altogether a most formidable, dignified person, boring into me as I removed the drips from his carpet. Never having seen a map before, he showed great interest when we pointed out our route, but we could not make him understand why England was not shown on the same map.

The owner of an unladen ass caught up with us in the afternoon, and offered to take our packs. We accepted, but then found that we had to walk in front so that we should not be continually aware of the ludicrous sight of a donkey carrying a load which was slightly bigger than itself. At Zamanabad we were taken up to the khan's house where tea, cakes and boiled sweets were spread before us. We were shaken out of the stupor that followed by the information that there was a "machine" outside the village waiting to take us on to Obeh. Thirty miles away, it was the last village of any size before Kabul. There was, in fact, and to our great astonishment, a large lorry outside, whose shape was only faintly discernible through the mass of bodies perched on and around it, of which I later counted more than fifty. It was evident that there were many who were taking advantage of the rare opportunity which presented itself once, and sometimes twice, a week. Squeezing ourselves in, we were quite unable to turn round to say farewell to our host, before the "machine" lurched forward and was off.

It was after dark when we arrived in Obeh. We had had two halts: the first was to enable everyone to get out and say

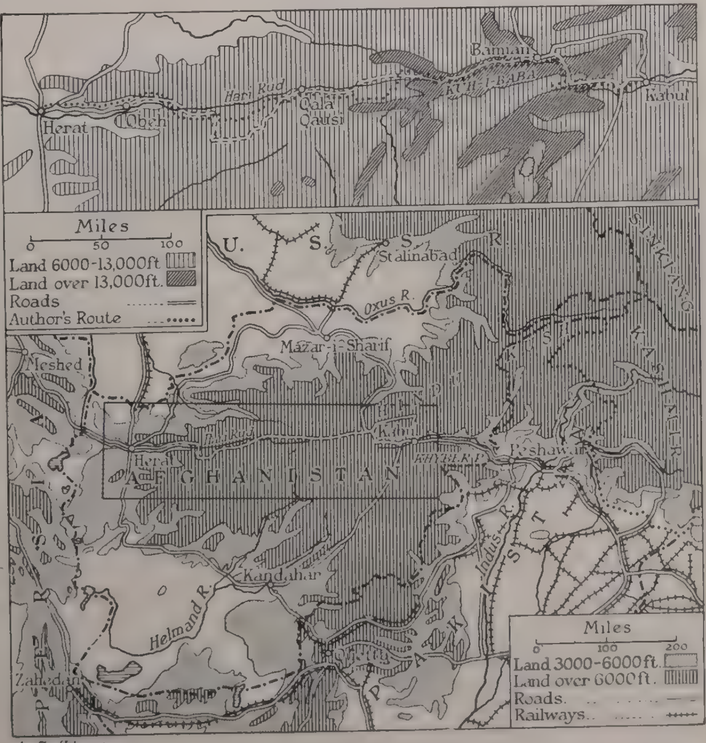
(Top left) *At Qala Qausi horses were provided as it was thought unseemly for guests of the government to walk* (Top right) *A message informing the* hakim *that the travellers were leaving his province was sent by tapping the telegraph wire from Herat to Kabul* (Bottom) *Some of their armed escort*

prayers to Mecca at sunset, and the second served the double purpose of allowing the lorry to proceed, unburdened, up a particularly steep hill, while the occupants once more prostrated themselves towards the west —this time with more relevance to the immediate prospect of being benighted. A young man in a Karakul cap, who had evidently been warned of our arrival by telephone, met us and took us to what was called the King's Guest-house. After a colossal meal of fried rice, chicken, spinach and *mast*, the young man overcame his reserve sufficiently to tell us that he was a vet, and then to break into what he could remember of the English he had learnt at school in Kabul. This mainly consisted of phrases like "Fee, Fi, Fo, Fum, I smell the blood of an Englishman, be he alive or be he dead", or "Mirror, mirror on the wall, tell me who's the fairest of them all". His job was injecting the cattle in the area against rinderpest, and enforcing quarantine regulations.

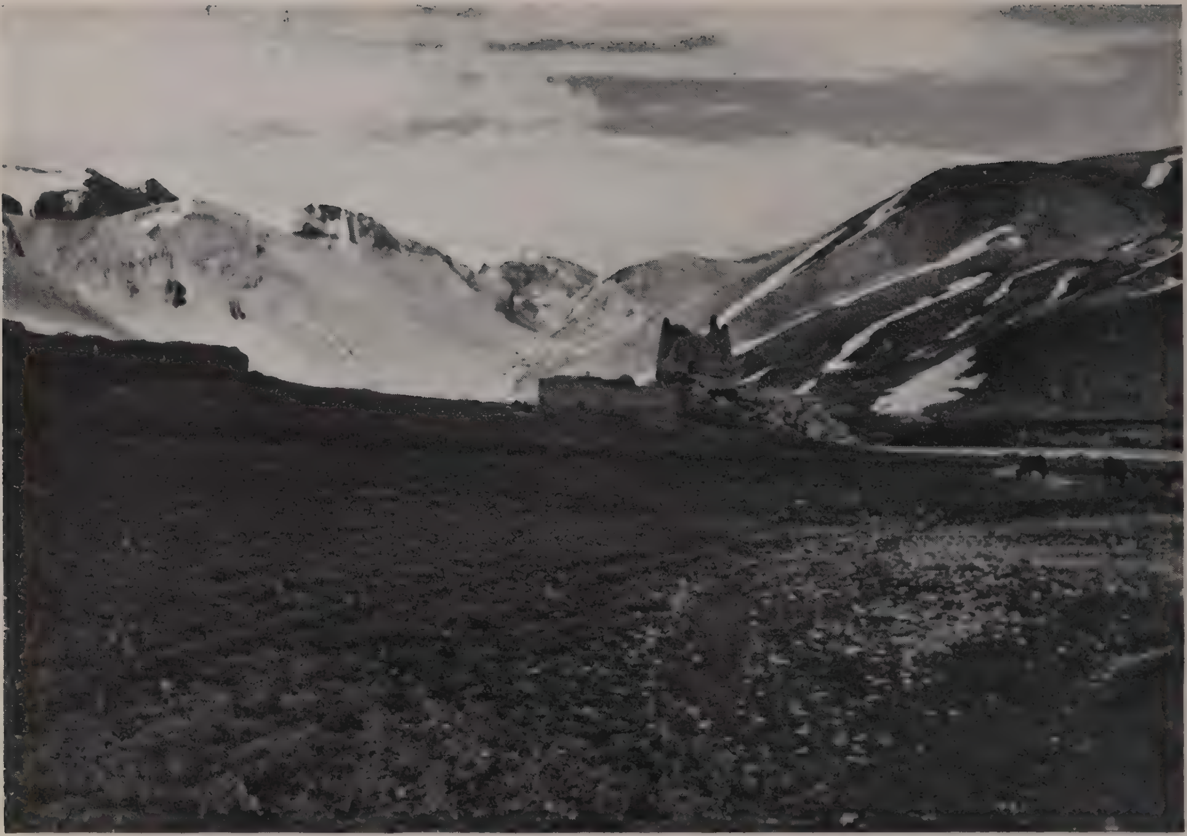
We stayed one day in Obeh, exploring the contents of the shops that lined the only street —I bought two pounds of smokable tobacco for 6d.—and walking through the orchards and public gardens. The blossom was nearly over, though huge irises were in bloom everywhere. On the morning of our departure the khan, accompanied by an assistant, by a judge and by a sergeant of police, arrived to pay a call on us. My Persian was improving, and though the interview could never have been called a chatty one, I discovered that we were being made the offer of a pony to carry our packs for the next stage of our journey. Astonished, we accepted. We left, shortly afterwards, to the strains of a class of schoolchildren being led in outdoor singing by the vet. We soon found ourselves overtaking flock after flock of sheep, which were being taken up to their summer pastures by the nomadic Kutchi tribes. Large trains of camels, loaded with tents, cooking-pots and womenfolk, preceded them and drove large clouds of dust before them.

In this way we continued up the valley of the Hari Rud for the next week, staying the nights in tiny villages tucked into the corners of small side-valleys. Soon we had left the fields of wheat behind, and the bread we were given was of barley. This formed the main part of our diet, washed down by mutton soup. The midday meal invariably consisted of bread and a dishful of eggs floating in mutton fat. We estimated that at the end of one week we had each consumed forty-seven eggs and at least a pint of fat. There were no vegetables, but any amount of milk in the form of *mast*, and sometimes of clotted cream. The milk was usually from sheep, but sometimes from goats.

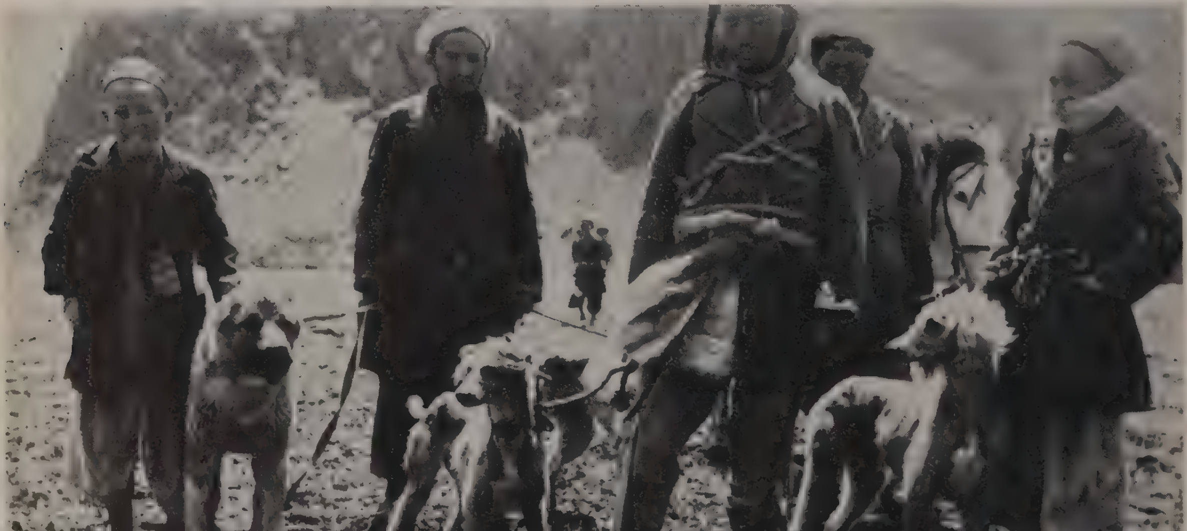
At Qala Qausi a huge white building dominates the landscape for miles around. We were told that it was the new administrative headquarters for the district of Chak-Charan; the only other habitation in sight, apart from a ruined castle across the river, was the fort in which we stayed with the local governor. Though we were his guests, it was not till the next morning that I managed to get an interview with him. A soldier, who had a squint and was to accompany us for the next week, took me to the Holy of Holies, which entailed passing through countless passages and empty rooms and two sets of curtains. The *hakim* sat drinking tea in a carpeted corner of his room, with a telephone and a wireless at his elbow, but my observation of the room ceased when I saw that he was offering me a cigarette. After some preliminary remarks, he expressed great con-



A. J. Thornton



(Above) *At the entrance to almost every side valley on the road from Herat to Kabul stand the ruins of forts and castles, eroded by the winds into fantastic shapes, deserted but haunted by a history that is by no means ancient.* (Below) *A deer-hunting party setting out with Afghan hounds and a great mastiff to help at the kill*



The British Embassy outside Kabul, where the Ambassador and his wife outrivalled the Afghans in hospitality by entertaining the pair of unofficial wanderers in great comfort for four days, after their 500-mile journey from Herat, before they proceeded through the Khyber Pass to Pakistan

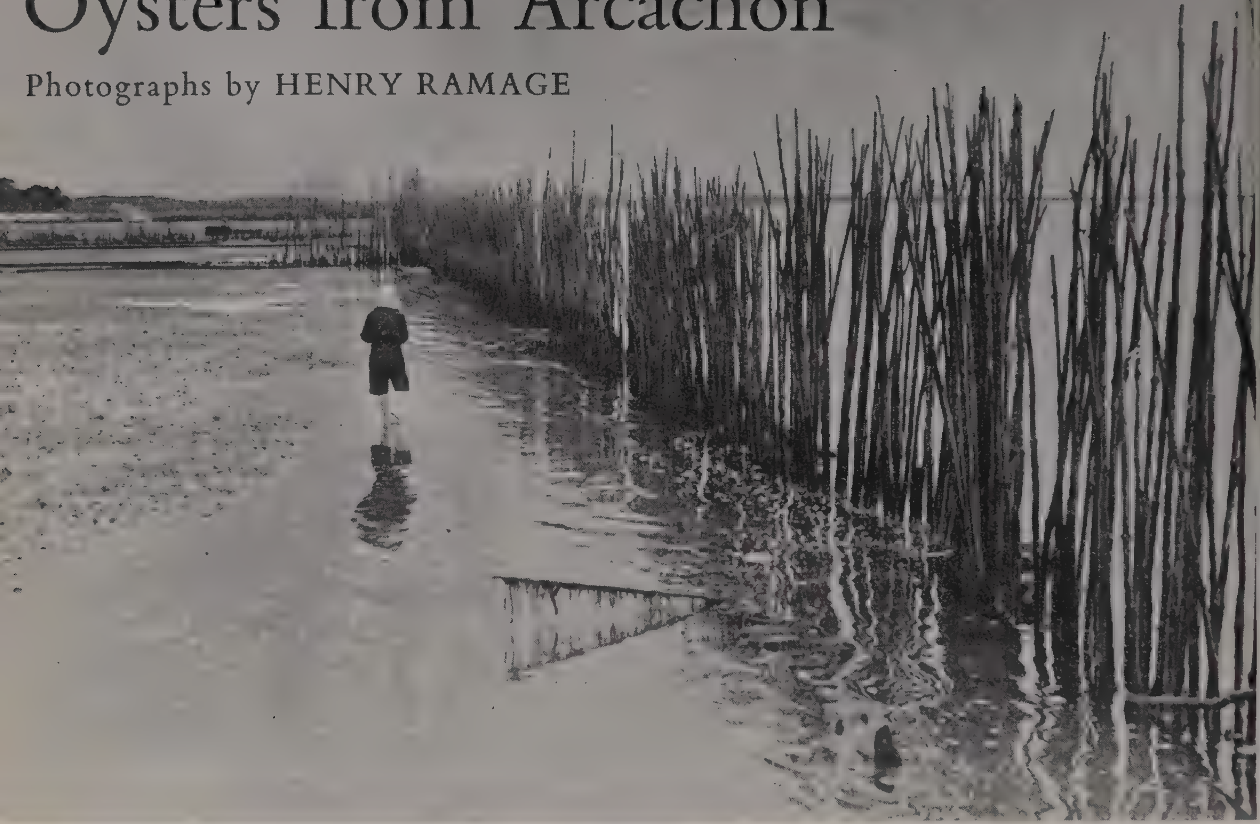
cern that we had come so far on foot, hinting that it was not altogether in keeping with one's dignity to do so.

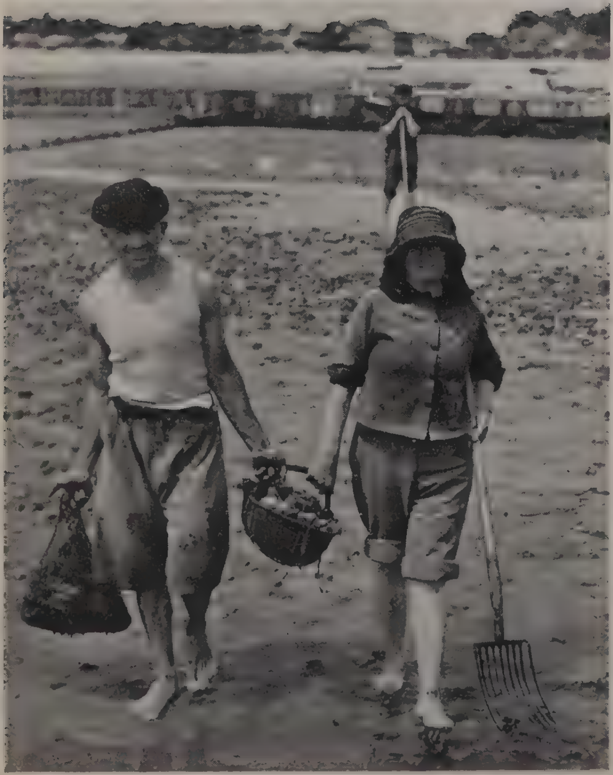
Two hours later we sat astride a pair of horses he had requisitioned, while our packs followed us on another. And two days later I was able to take a photograph of the escort, thirteen strong, all armed and all mounted, which took us to the border of Herat province. Thenceforth we came under the direct jurisdiction of Kabul, but the hospitality we received was certainly no less than it had been before. Hospitality, as understood by the Afghans, seems to have no limits. It might, of course, be put down to a feudalistic fear of the consequences, should the fact that we had been ill-treated reach the ears of higher authority; but this would not account for the many acts of spontaneous generosity we experienced. Their attitude towards us was such a positive one—we were guests and they were out to see that we took away pleasant memories of them, which we certainly did. Their generosity was at times almost paradoxical; when we reached Bamian, a tourist attraction on account of the vast Buddhist rock sculptures, we were installed in the modern government hotel there by a government official, who told us that as we were his guests, there was to be no question of paying. And he provided us with two mounts to carry us over the Kuh-i-Baba range on the last stage of our journey, after we had told him that we would rather do this, than go the long way round by bus. He seemed to understand why we wanted to do so, and I was once more aware of the dignified way in which the Afghans receive the innovations of the West; a bus might be an efficient means of transport, but the only proper way to travel was on horseback.

The British Embassy in Kabul were almost as glad to see us as we were to see them; not the least of their worries during the past month had been the embarrassing questions put to them by the Afghan Government as to what our real object could be in walking (and riding, though they forgot about that) from one end of their country to the other. They had no idea.

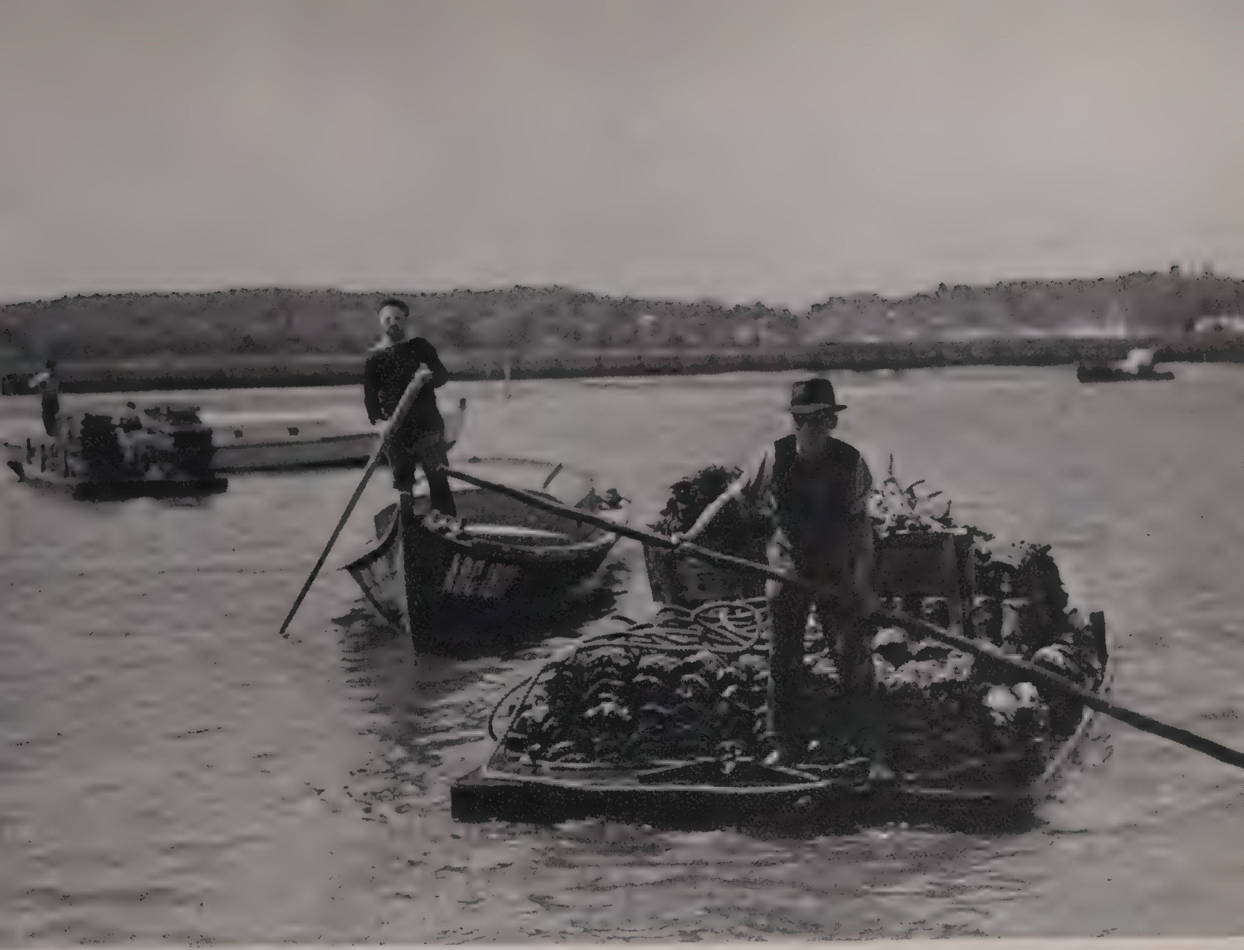
Oysters from Arcachon

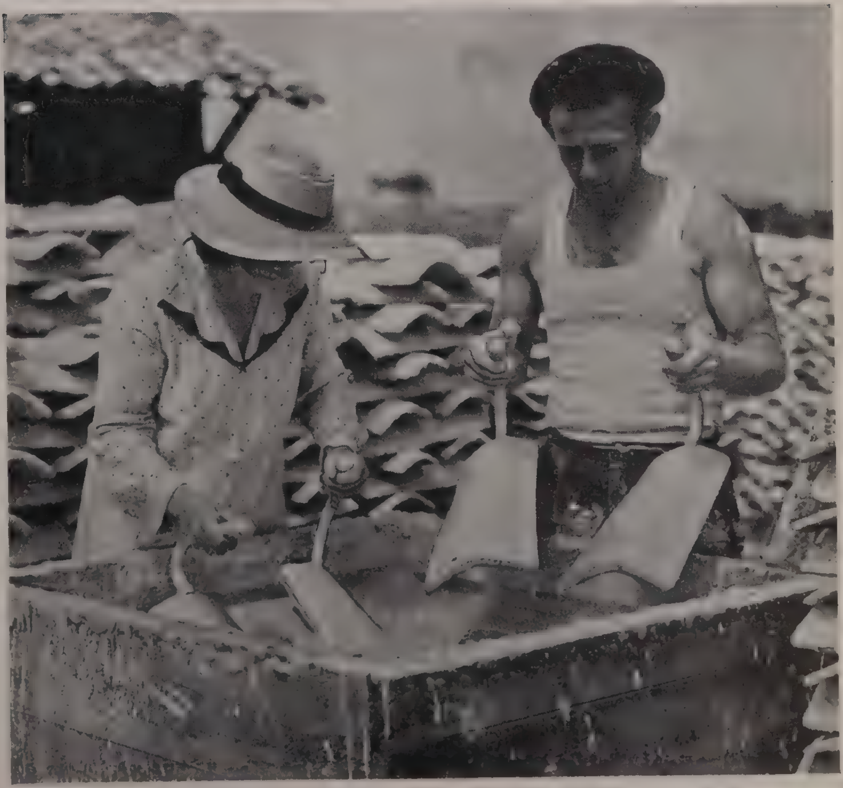
Photographs by HENRY RAMAGE



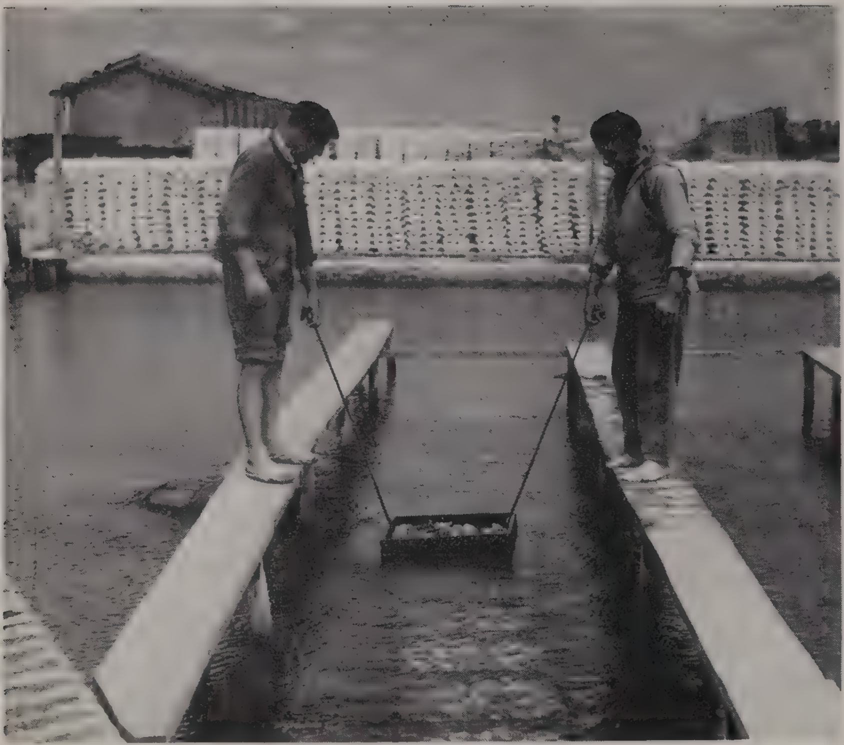


The landlocked bay of Arcachon in the Gironde, west of Bordeaux, is one of the fortunate places where oysters grow. The tidal flow from the Bay of Biscay washes thousands of acres of oyster-beds producing in a good year about 650,000,000 oysters, most of which are eaten in France; the rest are exported. A female oyster takes no chances but spawns some millions of eggs, as the baby bivalves are at the mercy of innumerable small inhabitants of the sea. Soon after leaving their parents the young oysters settle down to a sedentary life attached to some object—in Arcachon tiles are used—from which they are removed when a year old to beds where they remain two more years before being gathered. (Above) *The Arcachon oyster-farmers protect their parks by rows of stakes that break the strength of the waves and keep marauders out.* (Left) *the 'catch' is being brought home. Oysters are dug with many-tined curved forks*

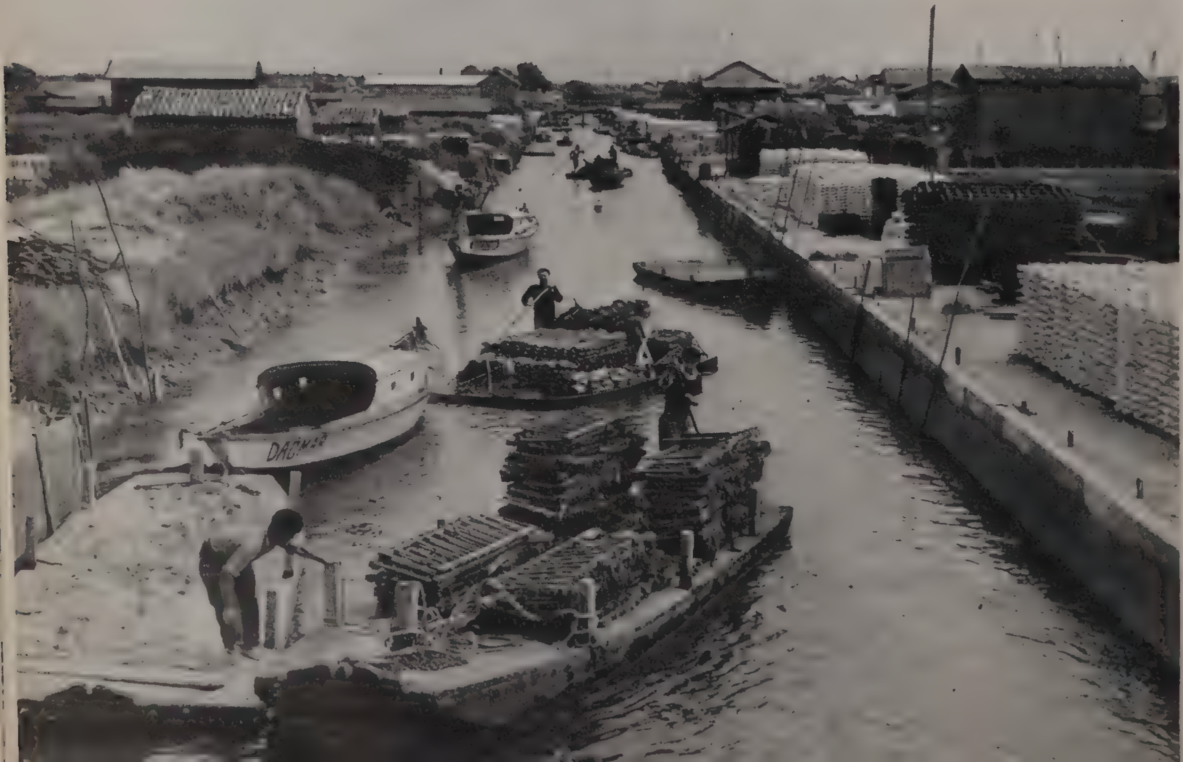




Most of the growing of oysters in the Arcachon district is done at Cap Ferret, the sandy tongue of land that divides the bay from the Atlantic Ocean. Rows of 'parks', each the property of a concessionaire, line its landward side. (Above) *After the day's work on the beds, or when the tide has risen, the farmers row back from Cap Ferret to Arcachon or La Teste where they live and where they work at cleaning and preparing the earthenware tiles to which the immature oysters attach themselves when their swimming days are over.* (Right) *After being scraped the tiles are coated with lime and sand, ready to receive a new generation of oysters*



When they have been gathered, the oysters are brought across the bay to shallow reservoirs at the bottom of the farmers' gardens where they are rinsed and cleaned and can be stored before being sent off to the gourmets of Paris or Bordeaux. (Left) *Oysters being rinsed by shaking them up and down.* (Below) *A canal runs behind the houses of the oyster-men, so that boatloads of oysters or tiles to be cleaned can be brought to the garden's edge where work is continued when the tide makes it impossible at the parks across the bay*



Religion and People in Tibet

by FOSCO MARAINI

A review of Signor Maraini's recent book Segreto Tibet *in* The Times Literary Supplement *described him as "a remarkable observer and writer, and a photographer* hors concours". *In two articles, each with a photogravure section, he will relate the part played by religion in the life of the Tibetan people to the Tibetan environment and the expression of religious ideas in Tibetan art*

THE first impression one gets of most countries is given by the unusual uniforms and the new faces of passport officials or guards. Tibet greets you with wind and silence.

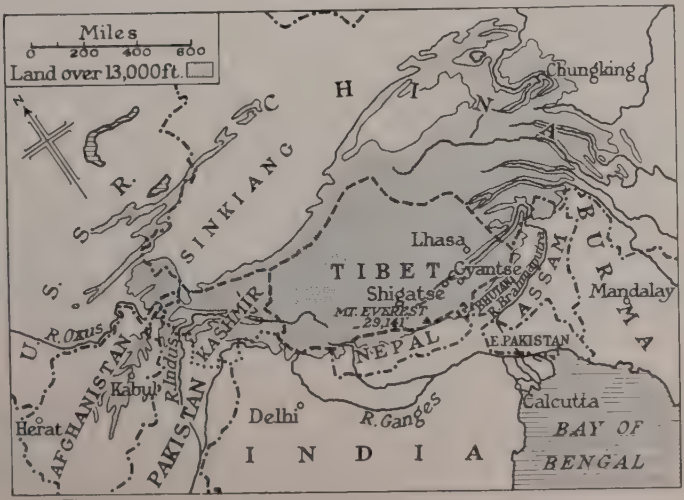
I shall never forget crossing the Natu-la, many years ago, for the first time. I reached the pass, which is 14,400 feet high and on the Indo-Tibetan border, slightly ahead of the caravan; I then sat down with my back to a cairn searching some shelter from the cold wind and the thick damp mists. A few minutes later I heard the voices of the muleteers and saw the first dim figures appearing in the fog. As the men reached the pass they picked up some small stones and threw them on a large heap of similar stones, shouting "*So-ya-la-so !*" It is considered a meritorious act to add a pebble or two to these sacred cairns which must always be passed on the right hand, according to an ancient Indian custom of showing respect. After a very brief halt the caravan started its descent and I remained alone again. The first act I had witnessed on Tibetan soil had been one, not of administration or bureaucracy, but of religion.

Religion, besides being extremely important in Tibet, is also extremely conspicuous. Any landscape—in the inhabited portions of this vast country—includes, somewhere in the foreground, sticks or poles with prayer flags, one or more of those turrets called *chortens* in which relics are buried, a wall with rows of sacred images carved in stone, and perhaps some large religious inscription traced in white stones on the mountainside.

Monasteries are nearly always imposing. The larger ones are like walled cities, with golden pavilions over the temples, glittering in the sun. They make one think of late mediaeval illuminated manuscripts ("*Les très riches heures*") or early Renaissance painting. The smaller monasteries are often conspicuous for their position high up on the mountains, some hanging over precipices or beneath protruding rocks, in the most dramatic spots.

Religion does not only strike the eye of the foreigner in Tibet; the air itself, at most times during the day, is full of strange sounds: it may be the shrill song of the silver trumpets blown by the lamas, or the accompanying deep voice of the large brass trumpets twenty feet long that resembles the distant rumble of thunder. Religion meets you in conversation ("we are friends because we have certainly been near in a previous life" . . .), it is visible in the trinkets worn by the people (amulets around the neck, rosaries, small charm-boxes for the women, larger ones for the men), it appears in the names of persons (Dorje "Thunderbolt of the Gods", Nga-wang "Power of Secret [teachings]", Drölma "the Saviouress") and in the games the children play.

Naturally the word religion must be taken here in a very broad sense; superstition and sorcery are important elements in the picture. Buddhism never reached Tibet in its primitive and purer form. Centuries earlier the original Buddhism had split into Hinayana ("the Small Vehicle", the path for the few, the elect) and Mahayana ("the



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Great Vehicle", the path for all). Mahayana Buddhism, wishing to attract crowds of popular believers, 'the many', changed steadily from a lofty school of philosophy to a polytheistic religion with prayers, sacrifices, remission of sins, masses and ceremonies of all kinds in which the officiating priest acquires magical powers. A further development took place through an intimate and protracted contact with Tantric Hinduism. At this stage—during the early centuries of our era—Buddhism adopted the worship of female deities, strange erotic symbolisms, a ritual of extreme complication that changed its whole nature and finally produced the religion which later reached Tibet.

This over-ripe and slightly sinister fruit of mystical experiences and metaphysical thought, that had developed in a country of jungles and steamy forests, of overwhelming sensuality and voracious hunger for life, found totally alien surroundings up on the world's highest plateaux. But nature, curiously enough, did not prevail over human tradition and a 'fossil India' of great vitality thrived for centuries in the burning souls of mystics and ascetics, on frozen mountain summits.

Another step in the development of Tibetan Buddhism was caused by the contact of the new religion with the ancient, aboriginal one: the Bon cult, a sort of Shamanism. While Buddhism, even in its most elaborate and most baroque developments, had always professed a deep respect for all forms of life, both human and animal, Bon worshippers sacrificed human beings with the greatest ease and, it seems, pleasure; they were sorcerers and shamans with a cruel bent for torture and bloodthirsty rites.

Quite soon after its introduction to Tibet, in the 7th and 8th centuries A.D., Buddhism became an organized and centralized religion with an established priesthood and ritual, while various monastic sects developed. A very important sect was the one which took its name from the Sakya monastery, founded in 1062. A legend relates that Kublai Khan (1216-94), the Mongol Emperor of China, wishing to find a suitable religion for his pagan subjects, called to his presence the most famous sages of the Buddhist, Christian and Moslem faiths, challenging them to demonstrate with a miracle the excellence of their respective doctrines. Only the great Lama of Sakya succeeded, so goes the legend, in lifting a goblet from the table to the Emperor's lips without touching the object. Whether the legend be true or not, it is certain that during the following century Tibet was practically governed as a fief by the lamas of Sakya. Though the power of this sect waned quite soon after, the pomp that surrounds the Sakya lamas (who marry and hand over their post to their sons) is to this day more regal than monastic.

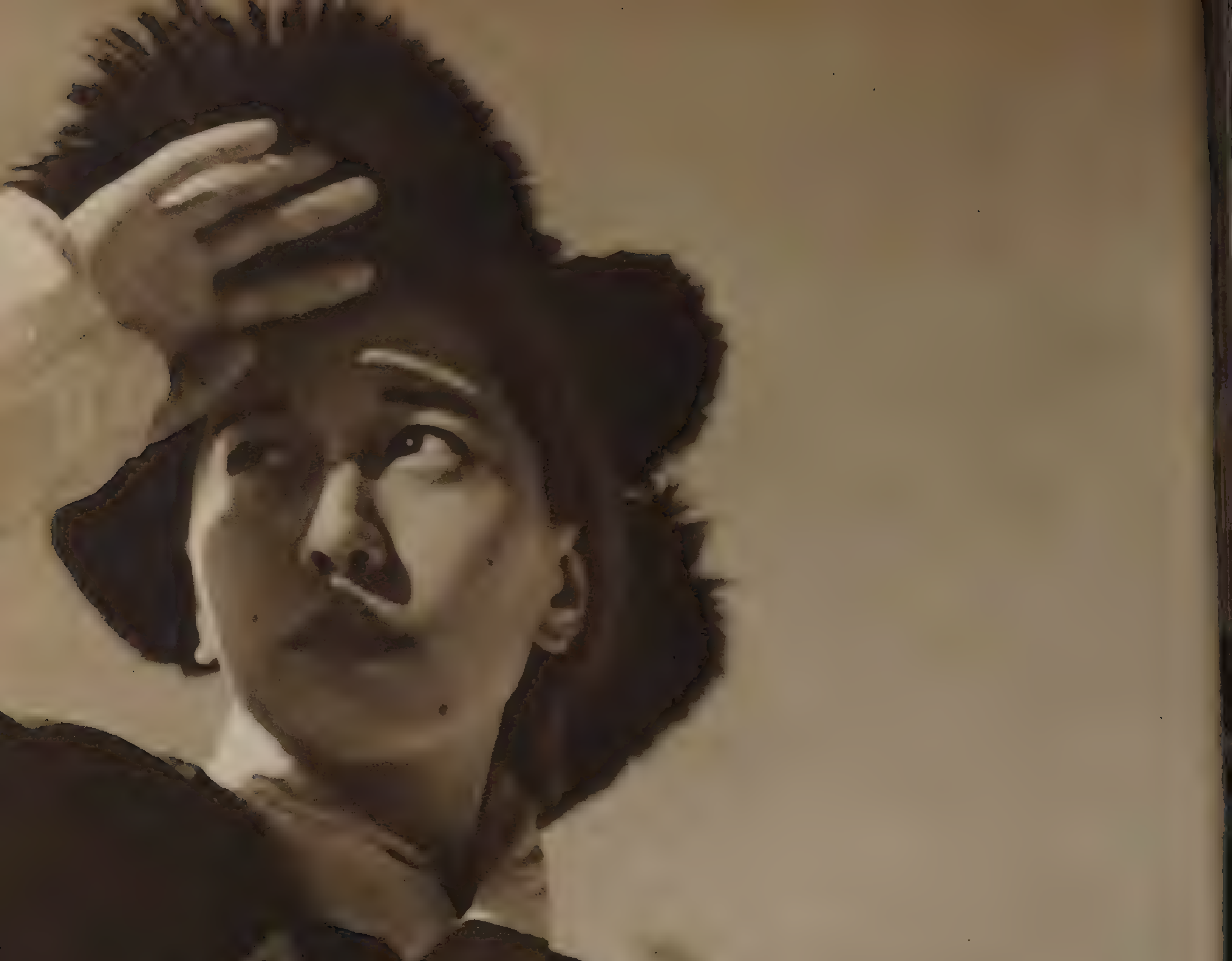
Lamaism, as it is known today, with a 'pope' seated in the Potala at Lhasa, appeared fairly late in the history of Tibetan Buddhism. At the beginning of the 15th century Tsong-kapa ("He from the Land of Onions") re-organized one of the sects and called it the "Virtuous Order" (Gelug-pa), widely known as the "Yellow" sect. Tsong-kapa was a man of great talents and relentless energy; in a very short time his followers—on whom he had imposed vows of celibacy, poverty and vegetarian diet—took the lead in all important Tibetan affairs. Five generations later they obtained the priest-kingship and Lama Ngawang Lobsang was confirmed in his sovereignty over Tibet by the Chinese Emperor (1641).

A comparatively recent development is the practice of succession by reincarnation. According to Buddhist principles a life of great sanctity delivers the human soul from the cycle of rebirths and opens the final entrance into nirvana; but a really great being, a Bodhisattva ("He whose essence is Illumination") renounces the unending bliss and returns on earth to help animals and men in their progress towards deliverance. Hence at each generation the Dalai Lamas of Tibet have reappeared in this world finding abode in a new body. In theory there have not been fourteen Dalai Lamas of the Gelug-pa sect, but fourteen appearances on earth of the same person. The birth of this One being was soon pushed back from history into legend, from legend into metaphysics, and the Dalai Lama came to be considered no other than Avalokitesvara, one of the five celestial Bodhisattvas of Mahayana Buddhism, the personification of Infinite Mercy.

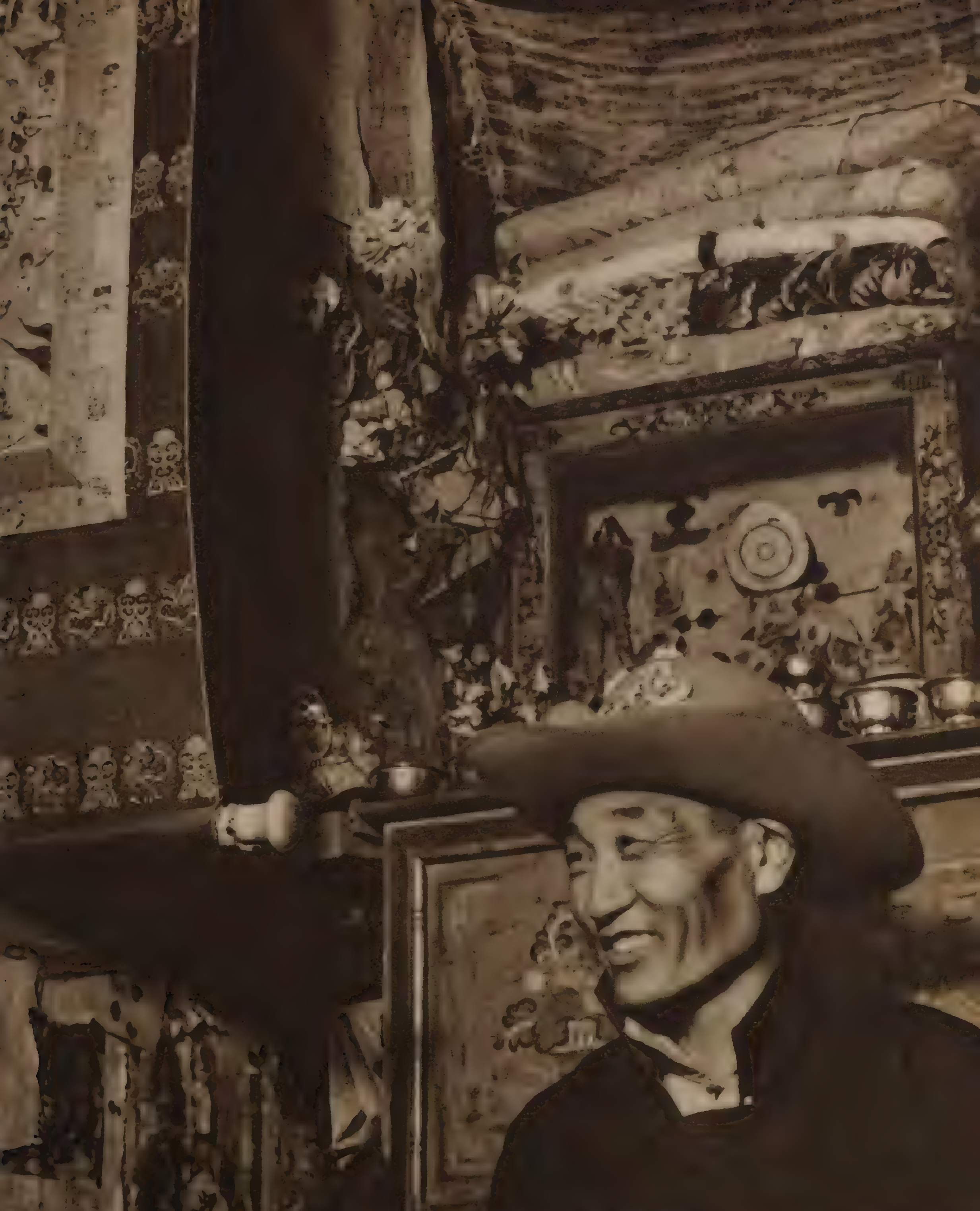
Another very important figure in Tibetan history and politics is the Panchen Lama whose seat is at Tashilhunpo, three days' journey from Lhasa. In the case of the Panchen Lama also there soon appeared a genealogy with celestial origins; and this with the advantage that he was considered to be the living incarnation of Amitabha ("Boundless Light"), one of the five celestial Buddhas of Mahayana Buddhism. Now for the very simple reason that, according to the teachings of Mahayana Buddhism, a Bodhisattva is merely an emanation of a Buddha,

All photographs by the author

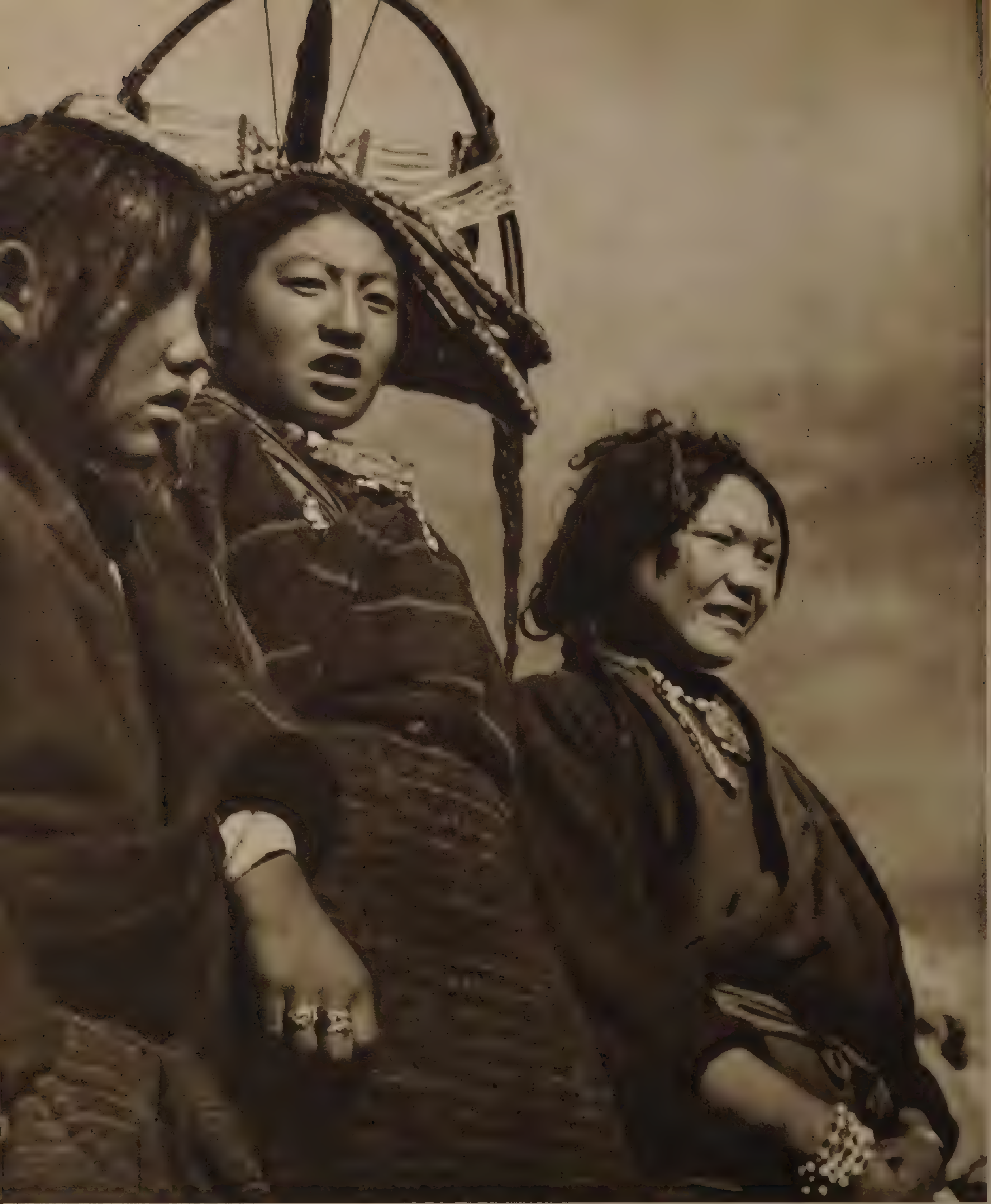
Most people think of Tibet as a land of lamas and hermits ; in fact, though all Tibetan culture is religious and monastic, not more than a tenth of the population is professionally attached to the various sects. Lay society is based on feudalism, with a pastoral and agricultural economy : the peasants who farm the land are the real backbone of this high, isolated country



Princess Pemà Chöki Namgyal is a daughter of the Maharaja of Sikkim. She recently married a Tibetan and is a member of the aristocratic upper class for whom Lhasa is not only the religious capital but also a centre of gaiety and fashion

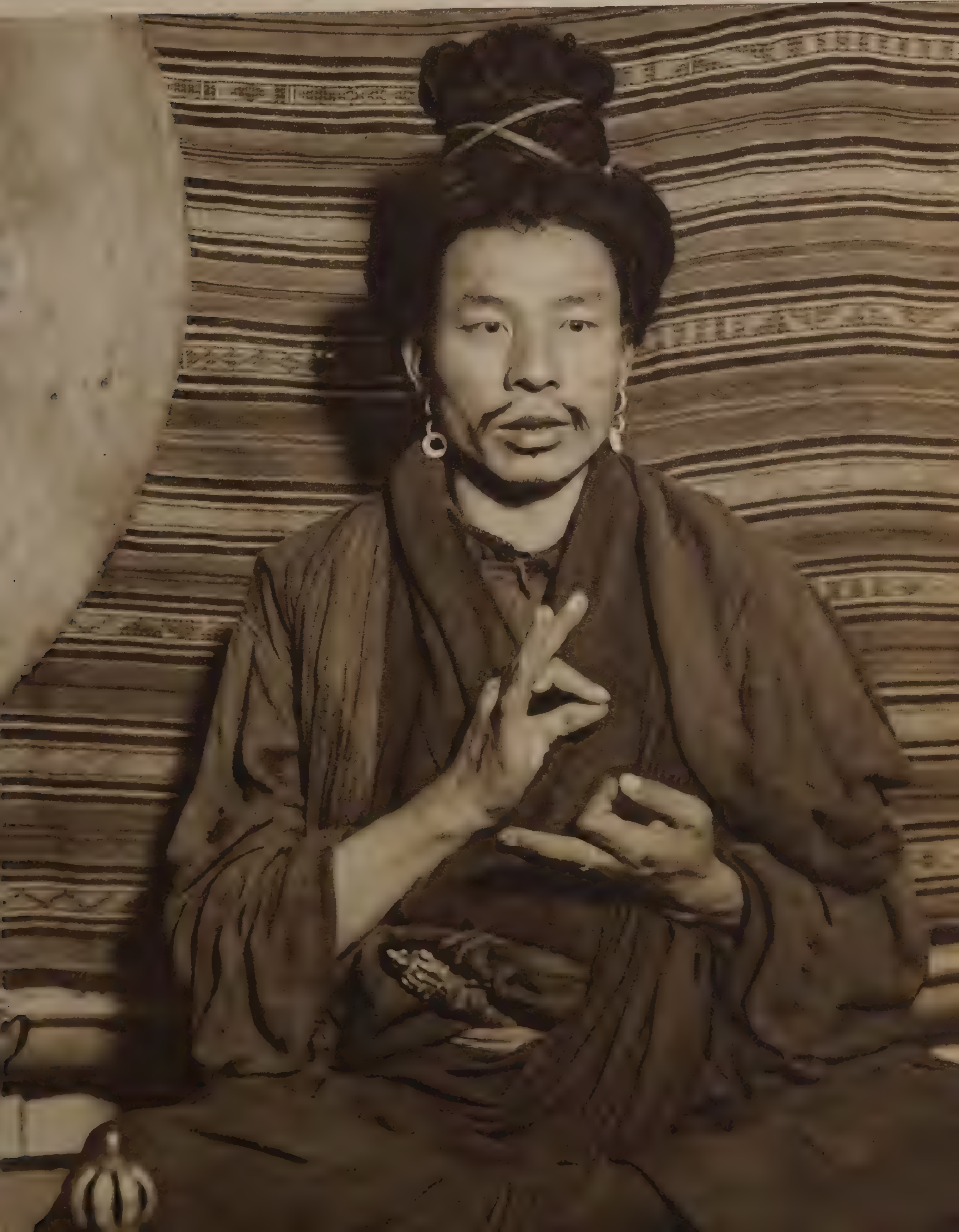


The am-chi, or 'doctor', of the town of Gyantse has a profound knowledge of all the herbs growing in his district. Men like this doctor and a few merchants form the small Tibetan middle class which is barely becoming conscious of its own existence

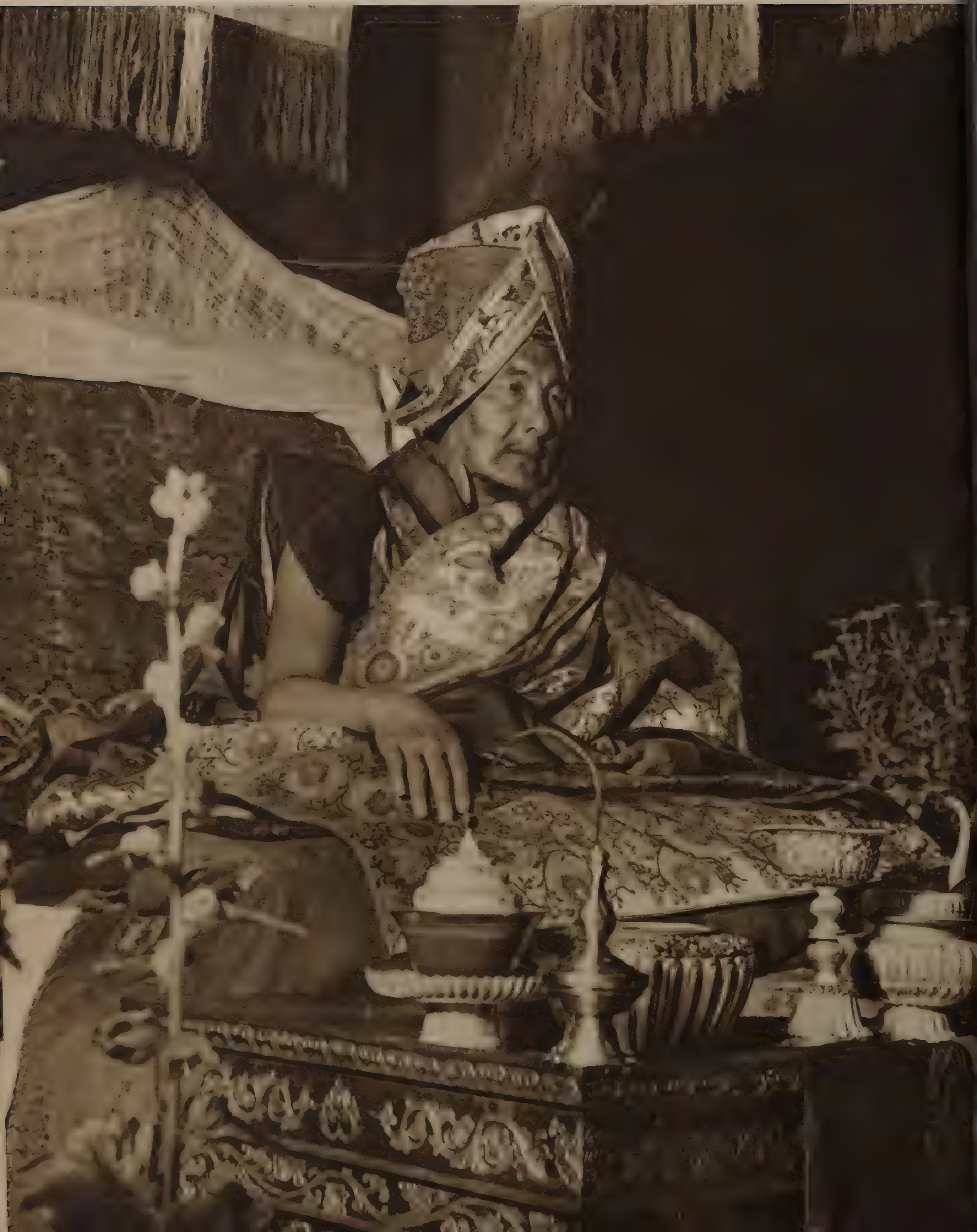


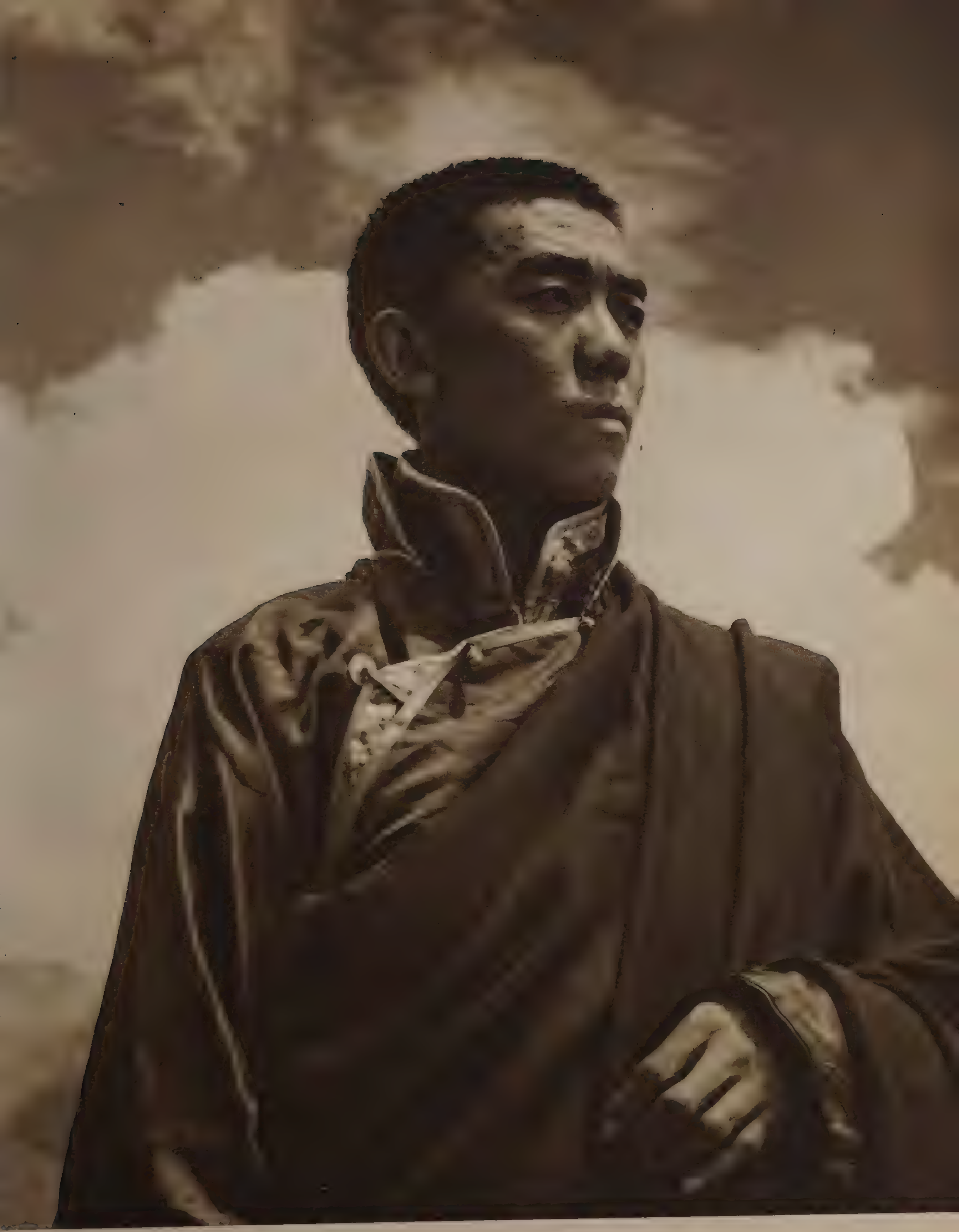
Tibetan women enjoy before marriage a freedom exceptional in Asia; afterwards they share many responsibilities with their husbands. Great importance is attached by the average Tibetan of both sexes to the counsels of lama-sorcerers on the problems of everyday life

A lama-sorcerer of the Kar-gyu sect performing the proper ceremony for good luck on a journey. His magic and soothsaying derives from the ancient Bon religion, a form of Central-Asian Shamanism, that deeply influenced local Buddhism and thus the whole life of Tibet

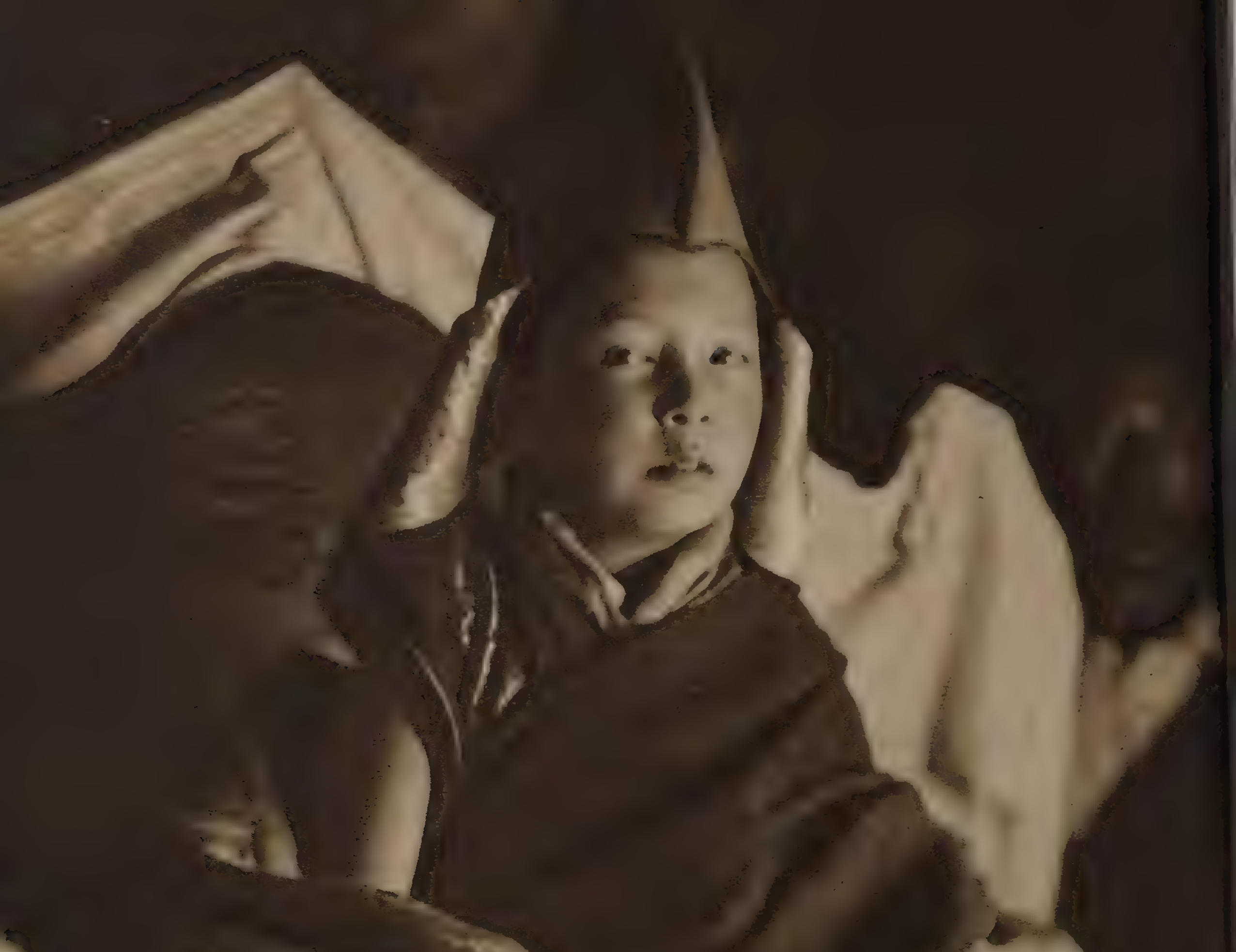


One of the Sakya sect, whose pontiff was invested by Kublai Khan with the temporal and spiritual rule of all Tibet: the Lama of Ngor in his sumptuous surroundings contrasts with—





the more austere appearance of a member of the Yellow sect which has dominated the country's religious and political life for four centuries: a theological student from a noble family



The twelve-year-old future head of the Dung-kar monastery. He is a Living Bodhisattva (those who, having attained nirvana, consent to be re-born for the benefit of their fellow-men) large sections of the Tibetan clergy and population consider the Dalai Lama to be spiritually somewhat inferior to the Panchen Lama.

This might seem a rather far-fetched point of Asiatic subtlety, but recent events have shown how important such distinctions can be in the politics of today. The Panchen Lama, after a long period of dissent with the government in Lhasa, fled to Mongolia in 1923; since then, though reincarnated in a youth now about sixteen years old, he has never returned to Tibet. Asiatic Communists have immediately taken advantage of this cleft in Tibetan politics and have actively endorsed the Panchen Lama as the true ruler of the country. The situation is still fluid and not very clear, but the outlines are simple: the Reds promote the return of the Panchen Lama to Tibet; the Dalai is rather hopelessly asking for help from his Western friends, who seem to have given up Tibet as a country too remote to defend.

Returning from international politics to ecclesiastical life in Tibet it is very interesting to notice the enthusiasm with which the reincarnation theory has been accepted and put into practice all over Tibet. Since the beginning of the 19th century practically every important monastery has had its own Living Bodhisattva (*trulku*, "phantom body"); it is easy to understand why: the presence of such an exalted person gives particular lustre to the institution.

In 1948 I met, and often saw, a charming boy of twelve, the "phantom body" of the monastery of Dung-kar, near Yatung, whither recently the Dalai Lama was reported to have repaired after his flight from Lhasa. The fascinating trait in the character of young Ngawang Lobsang Gyalden was the absolute purity of the faith he had in his mission. He knew he was a god. He constantly lived in a delightful and mystical fable; the unending wonder he felt irradiated as a fluid to all who were near him. I often saw him sitting in state on his golden throne, surrounded by monks, while the faithful came to pay him homage. On such occasions he would act with the greatest dignity, a born prince of men, revealing no shyness, no hesitation, sure of himself, with the authority that countless aeons of experience in past existences now gave him.

After the crowd had left he would wave his assistants away, take off his cap of yellow silk (the sign of authority), his heavy cloak, and go out in the open air to play on the grass with a football. A few minutes before he was a god on his throne, now he was a simple and healthy boy, panting and laughing, perfectly natural and unconcerned.

While the Dalai Lama is a minor, state affairs are run by a Regent. The same principle applies to monasteries in which "phantom bodies" are growing: the regent in this case is an abbot. Under this very important person live the lamas, the ordinary monks and the acolytes. The meaning of the word lama is often not quite clear. A lama is not an ordinary monk, he is a 'teacher' and only acquires this title after having passed a series of difficult examinations. A higher title still is *geshe*, doctor; only very few reach this stage.

Around the regular clergy of the established church and the clergy of the minor sects there is an outer fringe of magicians and sorcerers; they generally do a thriving business, as every Tibetan feels himself surrounded by innumerable invisible forces out to harm men, women and children or their belongings. Once, as I arrived in the country house of Prince Taring, near Gyantse, a thunderstorm broke upon the valley with terrific violence. A magician was sent for and made to climb on the roof; there he started blowing a conch with all his might, to ward off the evil 'thunder spirit'. It so happened that the storm did not harm the house or the fields nearby. Shortly after, when the magician had left, Prince Taring remarked that the happy outcome was quite natural, since the man he had called for was "really a most capable fellow".

Though all Tibetan culture is religious and monastic (for instance there is no word for literature other than religious literature) Tibetan life is only partly monastic. Most observers agree that about ten per cent of the population is professionally attached to the various sects, but that the remaining nine-tenths of the population is lay. This statement will surprise many people: so much attention has been paid to the lamas of Tibet and to their religion. But Tibet is a country of very real and very human people who work and talk about money, get angry with each other and have life-long friendships, enjoy songs, a drink of *chang*, a good meal, fall in love and are jealous, suffer and die like men and women all over the world. In fact Tibetans show a particular zest in every action: just as they are great walkers, great bandits, great drinkers of chang, great merchants, great lovers of women, great eaters of *tsampa* (roasted barley flour) and butter, so also they are great ascetics, great saints, great founders of monasteries or fighters of devils.

The social bedrock of the Tibetan population is formed by a fairly large class of peasants and nomads. Some of the nomads (*dok-pa*) are highly specialized, speak a dialect which has peculiarities of its own and are considered generally 'different' by the usual run of Tibetans; others are only seasonally nomads, they live part of the year in the typical tent of coarse yak-wool and part of the year in their village houses.

Even the humblest tent or house in Tibet bears evident signs of great religious piety. Sticks and twigs, on both house and tent, are covered with prayer flags of many types and colours, a gay sight in the sunny, windy atmosphere. Inside there is always a family altar; in the richer homes a separate chapel. On the door are curious emblems of straw or dry twigs to ward off the 'sky demons' or the 'earth demons'. At this level religion is most intimately mixed with sorcery and magic. A peasant with someone ill in the family will very probably first seek aid from a lama; if that fails he will call in a *nga-pa*, a magician.

The spiritual life of the humbler Tibetans is totally religious: in this it resembles the spiritual life of European peasants during the Middle Ages. The invisible order of things is ever present; human affairs are only the tangible aspect of a vast celestial drama; eternal truths are translated into a simple, human language, a standard of moral greatness immediately comprehensible, often touching and beautiful.

A Tibetan middle class can hardly be said to exist. One is either a peasant or a landlord. If a merchant family becomes very prosperous, as has happened in recent years to the Pangda Tsang, it gets raised to the nobility: no social distinction is conceivable other than ecclesiastical or aristocratic. A few people, doctors, skilled artisans, some merchants or officials in the three largest Tibetan cities (Lhasa, Shigatse, Gyantse) can technically be said to constitute a middle class, but they are too few to have a real consciousness of the fact. Their standards of good conduct or happy living are purely aristocratic.

Passing from the lower to the upper classes it is natural to expect a still stronger, if somewhat less sincere, domination of religion over the lives of men and women. Aristocracy is always for established religion; this guarantees that things will not change and makes life not only safe by the endorsement of hierarchy, but beautiful with the pomp of its ceremonies. Sometimes Tibetan nobles, like nobles all over the world, are merely empty heirs to a tradition they do not understand; at other times they are men of great refinement or strong character, or both, though in a country governed on lines so completely theocratic, religion, for a member of the nobility, is not so much a question of beliefs or feelings as one of conduct and expediency. However high the position he may attain in the Tibetan state there will always be a lama above him. Only once, as an exception, has a layman been a Regent for a brief period: and as for Lungshar, who tried to set up a lay government about twenty years ago, everybody remembers much too vividly his cruel punishment (his eyes were taken out) to imitate him.

The influence of religion is, as usual, stronger and deeper on women. When travelling on the windy paths of Tibet I have met more than once caravans composed of a noblewoman on her pony followed by her servants and muleteers, out on a pilgrimage: a fact which, by the way, gives us an idea of how independent Tibetan women can be. Their position, in relation to their husbands, brothers and fathers, is theoretically one of complete inferiority, but practically one of equality.

Perhaps the most delightful instance of high birth and a passionate interest in religion, combined in one person, is offered by Pemà Chöki, the second daughter of H.H. the Maharaja of Sikkim. When a child she had a European governess, therefore her English is fluent. At the same time her outlook on life is perfectly Tibetan. Speaking with her is like penetrating magically into a Tibetan mind without the hindrance of a difficult language. In her conversation I found echoes of the great Buddhist teachings (brotherhood of all living beings, animals included; consequence of present evils from bad actions of past lives) and I found the fears, the wonders, the superstitions, the curious beliefs of popular Lamaism. She once recommended me never to drink tea offered casually along the road. "There is a strange belief in this part of the world: if you kill a lucky or a rich man you capture his luck or his riches. And white foreigners are all considered very lucky and very rich."

This was said while eating some very small and very dainty sweets out of an ancient Chinese bowl. The party was sitting in the drawing-room of the palace, after lunch. Pemà was looking beautiful in her gay Tibetan costume: round her neck she wore a necklace with a heavy charm-box of gold, studded with diamonds and rubies. Her only personal innovations were red lacquer on the nails of her fingers and toes and a pair of black French sandals.

Life at Maudheim

by GORDON ROBIN

We have published three articles on the Norwegian-British-Swedish Antarctic Expedition, to the expenses of which a first contribution of £2000 was made from The Geographical Magazine *Trust Fund. These described, in November 1949, its background and scientific programme; in July 1950, the voyage to Queen Maud Land; and in October 1950, the experiences of the R.A.F. Antarctic Flight. The author of the following exclusive article, an Australian, is its chief physicist*

A FEW minutes ago, well protected against the biting cold, I noted that we had recorded our lowest temperature to date, some eighty degrees of frost. Inside once more, I have taken off the heavy outer clothing and am settling down to start this article in the comfort of my small cubicle. I wear much the same clothing, and have similar feelings to those I have often had on a wintry evening in England.

But no! Knowledge of the intense cold outside, whilst I enjoy the comfort of the base, tonight provides the spice that makes life worth while. Tomorrow it may be the pastel shades of a sunset sky at noon, the mystic display of auroral lights or, for contrast, the brief encounter with an Antarctic gale when taking observations, which makes one feel that this life has an interest that more than compensates for the loss of many of the enjoyments of civilization.

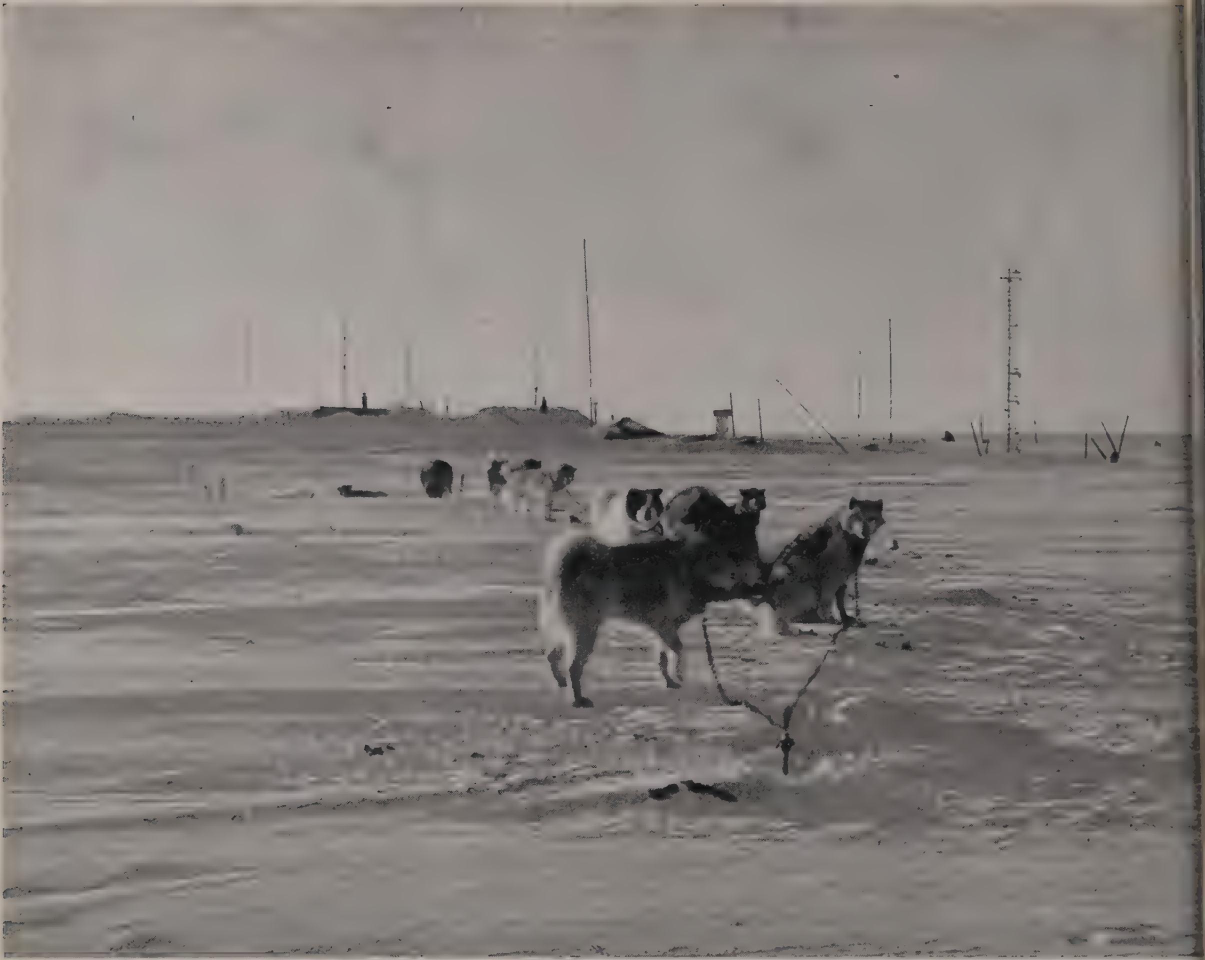
Let us take a look at life in a corner of Antarctica. Approaching the base over the level, featureless plain of shelf-ice, we first see a multitude of radio and meteorological masts. Beneath them a small hillock of snow almost completely covers the base, which last March stood like a group of farm buildings in an open field. On penetrating into this hillock through a sloping tunnel, we find first a maze of passages and store-rooms built out of the hundreds of cases of stores necessary for such an expedition. The floor is the shelf-ice, the roof timber beams and canvas which in some places bends downwards under the weight of snow on top. Small electric lights guide us to the door of one of the solid living-huts.

Inside we may find people making gear ready for next summer's sledging trips, working out the results of the day's observations or enjoying the cook's excellent coffee and cakes. Heavy beams sloping down to low walls are seen overhead. The main part of the hut is filled by the kitchen, the heating-stove in the centre and the dining table across the far end of the hut. On either side are small cubicles, just six feet by four and a half. Each has its own arrangement of bed, table, shelves, electric light and curtained entrance, and forms the private home of a Norwegian, British or Swedish member of the Expedition. Such is the scene in the dining-hut. The other living-hut is similar, but we are likely to hear the wireless operator tapping out weather messages to Cape Town radio or sending a request for next year's stores direct to Bergen radio in Norway. Alternatively we may arrive while the daily balloon ascent is being made and hear the intermittent note of a small radio-transmitter sending meteorological information from ten miles above the earth's surface. Let us look into the preparation necessary for this daily balloon ascent in more detail.

When he has completed his six A.M. observations, the duty meteorologist makes his way through passageways of cases, then along a snow tunnel which widens out into the gas-generator chamber. He carefully but rapidly inserts chemicals, then water, into a steel cylinder in which hydrogen is produced under high pressure. An hour later, after the process has cooled off, he returns with a large rubber balloon which he fills until it takes up most of the room in the eight-foot-wide balloon-filling chamber. When the balloon is thus prepared he is joined after breakfast by others, to make the instruments ready for the ascent.

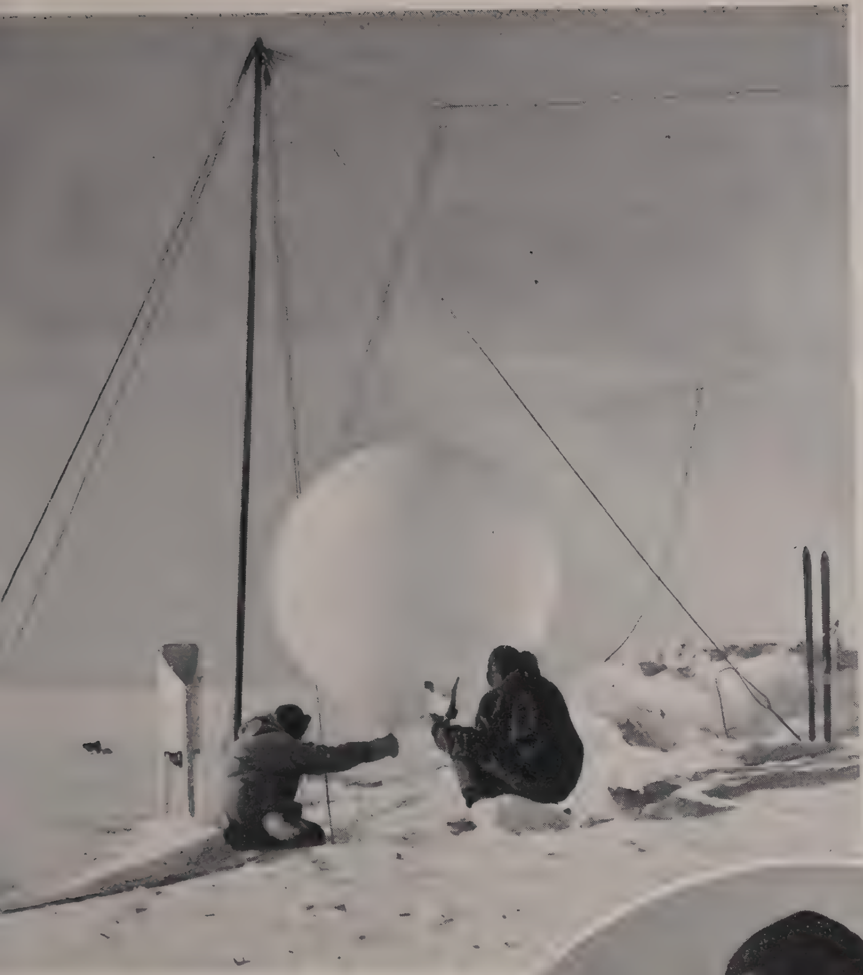
Two instruments are sent up with each balloon. First we see the 'radiosonde' which transmits information on the temperature, pressure and humidity of the atmosphere to the ground station. It appears to be a small cardboard box with bright aluminium plates on the sides and a light bucket-type windmill projecting from one end. Inside the plates are an aneroid barometer, a bimetallic thermometer, and a hair hygrometer each of which in turn controls the frequency of the small radio-transmitter in the box. The batteries for the transmitter are the heaviest part of the instrument which has a total weight of only ten ounces.

The second instrument to be prepared is the 'rawin' transmitter. Its function is to send



All photographs from members of the Norwegian-British-Swedish Antarctic Expedition

Maudheim, a mere hillock in the vast plain of shelf-ice, has been 'home' to some seventeen people for the past seventeen months. It stands nearly 140 feet above sea-level on floating ice about 600 feet thick. Norsel Bay, where all equipment was unloaded, lies two miles away at the junction of the relatively stable shelf-ice with the pack-ice which becomes mobile in summer. (Above) *The base partly snowed under by the winter storms which,* (right) *beginning soon after it was established, almost covered it*



The recording of meteorological information which hitherto has not been obtainable is an important part of the scientific work being undertaken by the Queen Maud Land Expedition. The research programme includes daily balloon ascents to ten miles above the earth's surface. (Above) *The balloon rising from the chamber where it is filled.* (Right) *One of two instruments attached to it: a 'radiosonde' which transmits information on the temperature, pressure and the humidity of the atmosphere* a very-high-frequency radio signal out from the balloon which is then located by an accurate direction-finding set on the ground, thus enabling the speed and direction of the wind to be calculated in conjunction with radiosonde data. The transmitter is housed completely in a rectangular cardboard box with a small rod aerial projecting one foot downwards. The ground receiving set for the rawin consists of an imposing-looking radio receiver which moves around together with the operator, as he points the large directional aerial towards the balloon. The apparatus is housed in a special hut a hundred yards away from the main base block so as to avoid unnecessary interference. The base diesel-electric generators are also vital to the success of each ascent as they provide power to operate the ground receivers.

Preparation of the instruments is started by filling their miniature batteries with acid from a syringe. After a few minutes the battery voltages are noted and, if correct, the transmitters are switched on. The transmitter signals are checked, retuned if necessary, then all is ready for the ascent.

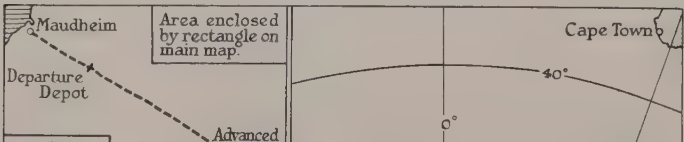
One man passes through snow tunnels and the gas-generator cave to the balloon chamber. The other two go outside and move aside two large wooden covers to reveal the balloon chamber beneath. After tying the instruments to the balloon, the lower man lets it rise out of the hole to one of the men above. He telephones the operators of the radiosonde and rawin receivers to stand by, then gives the order to release. The balloon ascends rapidly. Thirty feet below it can be seen the radiosonde spiralling its way upwards, the rotating windmill glinting in the sun. The balloon gradually becomes a minute dot in the sky before vanishing from sight, but its radio messages continue to be received by the two men operating the receivers at the base. Finally, after about an hour of intense concentration, the operators can tell that the balloon has burst. The records are then analyzed by the meteorologists to compute the temperatures, pressures and winds from the earth's surface to a height well into the stratosphere.

By the time this is published about 300 such ascents will have been made. So far only one set of instruments has been found afterwards, at a distance of four miles from Maudheim. Pieces of balloon rubber have however been found sixty-five miles away.

By using modern scientific aids in this way the most complete set of upper-air observations yet collected in the Antarctic is being made. Careful analysis of these data on our return will help to improve knowledge of world and Antarctic meteorology. Already some interesting results are apparent.

Although these ascents form one of the most important parts of the research programme carried out at the base, they are by no means the only one of interest. Other meteorological work includes the measurement of temperatures at different levels above the surface by use of a thirty-three-foot mast. At times it is fifteen degrees warmer at the top of this mast than on the surface. This difference is due to the large amount of heat lost from the surface by radiation, and is the cause of the frequent mirage effects seen on the shelf-ice. Measurement of this radiation forms another part of the programme.

The base work of the glaciologists also entails a number of investigations into the formation and structure of the ice on which we live. To the layman the most impressive part of their programme is the work of obtaining ice samples from various depths in the snow for careful laboratory analysis,



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With a heavy Canadian boring-machine, they have succeeded in bringing up samples from over 150 feet below the surface. As these are ice samples, the glaciologists have of course to keep their laboratory below freezing point all the time and must be very warmly clad when sitting still peering through a microscope for several hours at a time.

The glaciologists also spend a lot of time visiting their 'stakes', a number of metal poles, planted in the snow in a geometrical pattern around the base at a distance of up to two-and-a-half miles from it. This work looks much more prosaic than their ice-boring machine and laboratory analyses, but it serves two important purposes. First, by frequently measuring the change in snow level on the poles over a period of two years, they can determine the average value of snow accumulation for the shelf-ice around Maudheim quite accurately. Secondly, by making accurate surveys of the positions of these stakes several times during our stay, they will be able to see if there is any movement between different parts of the shelf-ice in this locality.

Theodolite observations have shown that the large plain of shelf-ice on which our base is built is rising and falling with every tide. To a reader in more temperate climates to live in such a floating home must sound rather insecure. If, however, he could be brought to the base, it would appear to him to be quite as solid as if it were built on *terra firma*. The magnitude of the floating shelf-ice is difficult to comprehend but, to use figures, the ice is about 600 feet thick and a square mile of it weighs approximately 400,000,000 tons. Careful examination has shown that the shelf-ice here is rather inactive. Unlike some parts of Antarctica, where the immense volume of inland ice is gradually pouring into the sea to form the vast icebergs of the Southern Ocean, it should be many years before the ice on which we live floats away.

Constant enquiry into our environment of snow and ice, fog and gales, intense cold and warm sunny days sledging—such is our life on the floating edge of Antarctica. Inevitably, therefore, one would want to know what is the difference between people who like this life and willingly isolate themselves for two years and those who lead more normal lives in civilization. Do we need to possess outstanding qualities? I believe not.

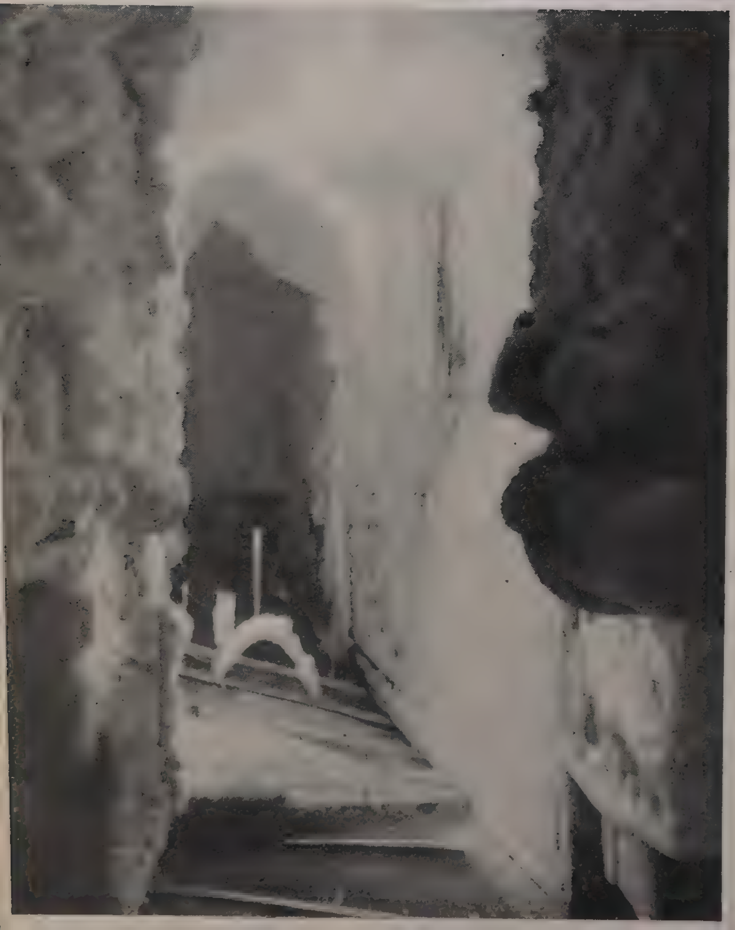
Wartime experience has shown that many people possess the qualities needed for work of this nature. As, however, the technical requirements of polar research are becoming very specialized, it is only a few who are privileged to take part in an expedition such as this. Nansen and Amundsen from Norway, Scott and Shackleton from England and Nordenskjöld from Sweden have all set such high standards of endeavour that it would be presumptuous to discuss qualities of enterprise and endurance in such an article. Though one hears less about them, tolerance, good humour and a rather philosophical outlook on life are very desirable qualities in one's expedition companions.

Radio has done a great deal to banish the isolation of the earlier expeditions, and members are able to hear the world news quite frequently. At present, though the importance of some items clearly stands out, in our remote position, we are able to appreciate the insignificance of much that is called news. This detached outlook may be compared to the view from the top of a skyscraper. The people below look like ants, yet one realizes that each speck is an individual with his or her own anxieties and joys, but these seem very insignificant compared with the well-being of civilization as a whole. Even after we return to civilization and become one of the 'ants', this detached outlook remains. Perhaps it counterbalances the knowledge that we need to have something of a rogue's mentality in our make-up, to take the risks of failure involved in penetrating unknown regions, after so much time, money and publicity have been given to the project.

The biggest risks of failure naturally arise when using new methods in these parts. It would be doing Americans an injustice to say that this expedition was the first to use mechanical transport on a large scale in the Antarctic, but we can say that the successful establishment of our base depended entirely on mechanical transport. Fortunately our three 'weasels', American-built track-laying vehicles made for snow or marsh country, successfully towed several hundred tons of stores from our landing point to the safe position on the shelf-ice at which our base is built.

Even now, in 1951, not enough confidence is felt in mechanical surface transport to dispense with the well-proved teams of husky dogs for our field-parties. Apart from mechanical breakdown, the principal menace of Antarctic travel is the crevasses. These gaping ice chasms are found in certain localities where the slow massive movement of the ice stretches the surface beyond breaking-point to form cracks, sometimes several miles long, thirty feet wide and a hundred

(Right) *Life beneath the snow at Maudheim is not without its creature comforts. Chief among these is the excellent cooking. John Snarby, a Norwegian and formerly steward on the expedition's ship* Norsel, *in the snug kitchen: it contains equipment that most housewives might envy*



(Left) *The warmth within the well-insulated living-huts contrasts with the intense cold permeating the maze of passageways and store-rooms by which they are surrounded. Here ice crystals form on the supporting beams and on every object among the hundreds of cases of stores*

(Above) *Indoors there is no lack of work to be done even in the depth of an Antarctic winter: recording and calculating the results of many kinds of scientific observation; preparing sledges and other gear for the next summer's journeys.* (Right) *The investigations of the glaciologists into the formation and structure of the local ice involve careful microscope analysis of ice samples: cold work in a laboratory where the temperature must always be kept below freezing-point*

Ten miles from the departure depot, on its way to the advanced base, the main reconnaissance party sighted the first rock-ridge to be seen from the surface in this sector of the Antarctic. The reconnaissance parties all used dog-sledges in preference to mechanical transport, thus mitigating the danger of crevasses from which it is much easier to rescue a dog than a 'weasel'! (Above) *A reconnaissance camp in view of the ridge with dogs asleep in the snow. A dog-sledge's load is about 2000 lb: less than a ton.* (Left) *Fred Roots collecting geological specimens from the ridge.* (Opposite) *When a weasel-trailer carrying two tons of supplies broke through a narrow crevasse bridge*

Depositing supplies at the advanced base 180 miles from Maudheim, within sight of the mountains

feet deep. Such a crevasse is no danger if it can be seen and avoided but the frequent gales often cause heavy drifting snow to form a cover or bridge over these holes. Even so, experienced eyes can generally detect their presence in good weather, but if not seen, a dog will break through a thin snow-bridge in time to warn the sledge-driver of the danger. A weasel-driver has no such warning and the danger is therefore greater. For this reason, we have adopted the following method to take heavy loads across the 180 miles of ice to the main mountain regions of Queen Maud Land. We had to place a large supply dump, generally called the "advanced base", in the vicinity of Regulakjeden, a large mountain massif charted by the 1939 German Schwabenland Expedition flights. Before using mechanical transport for the heavy loads, the proposed route was thoroughly inspected by dog-sledging parties who selected a path as free as possible from crevasses. Once the route was suitably marked, weasel parties would take three months' provisions for eight men and five dog-teams to the position from which the main geological, glaciological and survey journeys would start.

Reconnaissance of the first fifty miles of the route was made in September, and a dump of four tons of petrol, dog-food and food for the men was made at this point (generally called the "departure depot") by two weasels. On October 5 the main reconnaissance party set out. It consisted of Valter Schytt (Sweden) who was leader, Fred Roots (Canada), Peter Melleby (Norway), and Alan Reece (Britain), with Nils Roer (Norway) and myself (Australia) as supporting party. About sixty miles from Maudheim, the first rock-ridge to be seen by a surface party in this sector of the Antarctic was sighted. Ten days out from the base the main party were

able to carry the load brought for them by the supporting party, so the latter departed, making a detour to visit this rock-ridge before returning. From the top three more isolated groups of peaks could be seen to the south, looking just like rocky islets washed by the surrounding ice ocean.

The main party were considerably delayed by bad weather and could not travel on twelve of the forty-two days they spent in the field. They selected a site for the advanced base at the foot of a prominent 'nunatak' or island of rock, and marked the 180 miles of route back to Maudheim with snow cairns some five feet high placed approximately every mile.

On November 19 a weasel party under the leadership of Fred Roots set out with five tons of supplies for the advanced base and three tons of petrol and stores for the journey. The three vehicles toiled across the snow in much the same manner as heavy transport lorries along a rough country road. For the first thirty miles from Maudheim the route crossed flat featureless shelf-ice towards a rounded ridge of snow rising to about 1000 feet. After a ten-mile climb up this ridge, the route descended a similar distance to another forty miles of shelf-ice on the far side. Owing to the greater movement of this second sheet of shelf-ice there is a zone of crevasses on the level ice beyond the ridge. Two days had been spent by the reconnaissance party in an unsuccessful attempt to find a crevasse-free route here; and eventually a route was marked through an area where the crevasses were least numerous and most solidly bridged. Progress through this area by the November weasel party was slow and painstaking and, in spite of precautions, it was twice necessary to unload the two tons of stores from a sledge which had partly broken through a narrow crevasse bridge.

After crossing the second sheet of shelf-ice, the route climbs gradual undulating snow slopes, past the rock-ridge we first sighted, until it reaches an elevation of nearly 5000 feet. On coming over the top of this almost imperceptible ridge a magnificent alpine panorama is suddenly visible to eyes which have seen little besides flat shelf-ice and rounded ice hills for the past twelve months. The sight of numerous steeply rising mountain peaks above the ice, some slender pyramids, others massive blocks, is unforgettable. In spite of having had only twelve hours' sleep in three-and-a-half days' travel the sight so refreshed our party that we covered the last thirty miles to our nunatak without noticing the clock. We reached the nunatak, unloaded half the stores, took photographs and generally felt like holidaying schoolboys to be moving on rock once again. Then, scarcely tired, we went to sleep and later completed our work at the advanced base.

The return trip with light loads was more comparable to an automobile journey, as we seemed to move so much faster over good surfaces. It took one short day travelling, two days lying in tents during a gale, then a further long day of travel, in which we covered 140 miles, to reach Maudheim. After another supply trip along this route we shall set out on our summer sledging journeys with our advanced supply dump at the point at which we shall start our field investigations, an advantage worth the delay of later starting which our weasel journeys have entailed.

The attractiveness of mechanical transport in terms of, say, ton-miles is very great compared with dog or man haulage but the risks can also be much greater, and much extra care and delay are necessary. A rapid mechanical journey away from base could easily be followed by mechanical breakdown and disaster to a party then out of man-hauling range. For this reason we have placed emergency supply dumps of food for dogs and men every thirty miles along our route. The increased danger of crevasses has already been explained. We can, nevertheless, say that if the necessary experience in Antarctic travel and experienced mechanics and drivers are available, mechanical transport can at last replace dogs for known safe routes on this continent.

Perhaps this article has helped to show some of the problems and work we have to tackle here. I cannot finish without mentioning the cheerful atmosphere of the expedition huts which must be among the happiest of any expedition that has visited these regions. This has been greatly helped by the knowledge that our three governments have provided money for the Expedition, believing that it would help to cement the friendship between our countries. This is in contrast to the purpose of many post-war expeditions which aim to forestall the claims of other countries to Antarctic territories; our objective is the much more satisfying one of pure scientific research.

Such, however, is the rather overdone publicity on an expedition of this character, that we should at least have no difficulty in fulfilling the last part of the well-known advice to research workers "To seek the truth, and having found the truth, proclaim it".

Walter Gardiner

A mosaic in the Roman villa at Bignor in Sussex shows two birds flanking an alleged portrayal of Venus. If intended for pheasants they support the theory that these were introduced by the Romans

Animals and Man

IV. Chance and Deliberate Introductions

by G. S. CANSDALE

Surveying the effect of human action on the geographical distribution of animals, Mr Cansdale, who is Superintendent of the London Zoo, has shown what happens when man competes and conflicts with them, and where and when they entered the service of mankind. He now turns to the introduction of alien animals into countries from which natural obstacles had previously excluded them

In the first article of this series an attempt was made to indicate the profound, often devastating, effect that man has had on the natural fauna of countries of which he has taken possession. The effects considered there were those resulting from man's direct action, in competition and in conflict, with uncontrolled greed playing a big part, but man has also caused great and far-reaching damage indirectly, by introducing alien animals. The first few introductions, such as rats and mice, were presumably accidental (apart from the special case of domesticated stock) and resulted from carrying the animals as stowaways in ships or among baggage. Much later there came a period when a wide variety of animals was introduced into many countries, sometimes as a potential source of meat, sometimes to control other animals, but often just to remind colonists of their far-away homeland. This period is now past and any introductions that occur today are either stowaways that escape detection or thoroughly vetted species brought in for specific purposes.

In any natural fauna—and flora too—a state of equilibrium has been reached in which predators and prey are reasonably balanced, though Nature is never absolutely static and there will always be fluctuations. The introduction of some foreign element into this fauna may be very serious: a predator may wreak havoc on animals which have never learnt to defend themselves against its particular line of attack while another newcomer, finding an unoccupied niche, with ideal conditions and few or no natural enemies, may get right out of hand and become a serious plague. The more specialized the animal, the more difficulty it has in getting established and the less likely it is to become a pest. Also, the bigger it is and the more desirable for human food, the easier it should be to keep in check, provided that the human population is sufficiently dense.

The very first of these chance introductions must have taken place back in man's early days, as soon, in fact, as he began to move about to any extent, but it was probably not until sea transport developed that any major mischief was done by bringing new, often aggressive, elements to lands from which natural obstacles had previously excluded them. Comparatively few mammals have been classed as chance introductions; indeed rats and mice appear to be the only ones of importance. The black rat, or house rat, came to Europe in early times from Asia and by the Middle Ages it had already spread over most of the Old World, including Great Britain. The brown rat came much more recently—at the beginning of the 18th century—but proved more successful than the black rat, which it has largely replaced in many areas. The house mouse, an even more intimate associate of the human race, also came from Asia and is now world-wide in its distribution. Unmitigated pests everywhere, these rodents were quite certainly not taken of his own will by man when he moved to new countries, even though it is clear that the black rat and the house mouse arrived in North America very soon after the first European visitor. Rats and mice are now so firmly established in and around human habitations that they are unlikely ever to be exterminated.

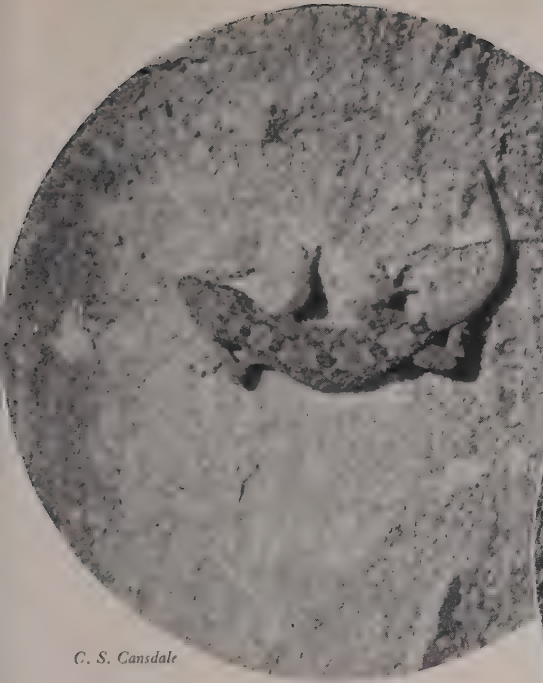
Practically all the chance introductions, both early and recent, have turned out to be very unwelcome guests in the countries of their adoption. One such invader has recently come to light in North America, and it is an interesting case of indirect human influence. The Welland Canal was constructed to bypass the Niagara Falls and make the principal Great Lakes accessible to ocean-going shipping, but at the same time it has allowed the lamprey to get up into the lakes and attack the trout there. These lampreys formerly lived in salt water, but they gradually moved up into Lake Ontario and thence, either by their own power or attached to ships, to Lake Erie. By 1948 the catch of lake trout in the United States section of Lake Huron had dropped from an average of nearly 2,000,000 pounds per annum to under 5000 pounds, and scarcely a trout was without sores or scars caused by the blood-sucking lampreys. Biologists are still far from finding an answer to this scourge which threatens to exterminate a very important game and food fish.

In marked contrast is a little nocturnal lizard—Brooke's gecko—which apparently has the distinction of being the only reptile (perhaps the only land vertebrate) to be found right through the tropics of both Old and New Worlds. We cannot be absolutely certain, but it very much looks as if this wide distribution took place with unwitting human assistance. Brooke's gecko is one of the most enterprising of the lizard family. Long ago it found that human habitations, lighted by night, made excellent hunting grounds, and few houses in Central Africa are without some of them sleeping in the cracks in the walls or behind pictures by day and taking station around the lamps by night to feed on the hosts of insects attracted to light. Before World War II, when bananas arrived by the shipload, the stems sheltered quite a variety of stowaways—spiders, centipedes and lizards, especially geckos—most of which found their way to the Zoo if they were discovered alive. It is likely that Brooke's gecko first lived in Africa but now it has travelled widely and is common in Central America and Asia as well. Its diet is restricted to insects and it does a lot of good, even though it may take a few useful insects. There would be no complaint if all animal hitch-hikers belonged to this class.

Most of the other chance introductions belong to the lower animals, generally referred to as invertebrates, or animals without backbones. Without exception they seem to be unwelcome. The *Anopheles* mosquito, carrier of malaria, jumped a lift across the Atlantic from West Africa to Brazil and cost many thousands of pounds to eradicate, by which time many lives had been lost. New Zealand also learnt expensively that insects can travel in aircraft. In 1945 the common European wasp arrived on North Island and, in spite of a campaign with D.D.T. and cyanide, wasps became established over an area of some 200 miles by 150 miles. Eradication is now considered to be quite impossible and the only hope is to keep the wasps away from the fruit districts. Very strict fumigation laws are now applied to aircraft in many countries with the result that mosquitoes, tsetse flies and other insect pests and carriers of disease are unlikely to get through.

The Colorado beetle is a pest that has crossed the Atlantic from the southern United States and has been much in the news recently. In the wild both grubs and beetles feed on the leaves of plants belonging to the family *Solanaceae*, and crops of potatoes provide conditions in which they can multiply at great speed. The beetle's first appearance in England was at Tilbury in 1901, a chance arrival by sea, but it was not until 1933 that it was seen again, also at Tilbury. Meanwhile it had become established in great numbers in parts of Europe, including the north coast of France, from which it can easily hop aboard a cross-Channel steamer and also be carried over by suitable winds. Small numbers have been found on crops in Great Britain from 1941 onwards, but so far it has not become fully established and, with continual vigilance, it may still be possible to keep it out.

(Below) *The Giant Snail of West Africa is a big eater. Its East African relative has travelled as far as the Pacific Islands. (About fist-size, fully grown)*

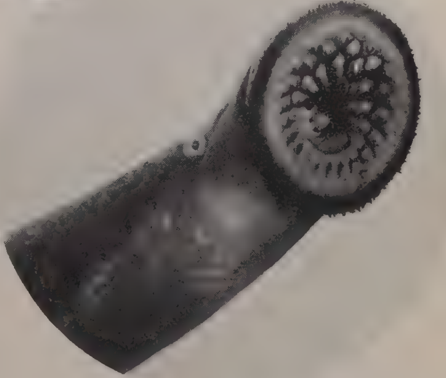


C. S. Cansdale

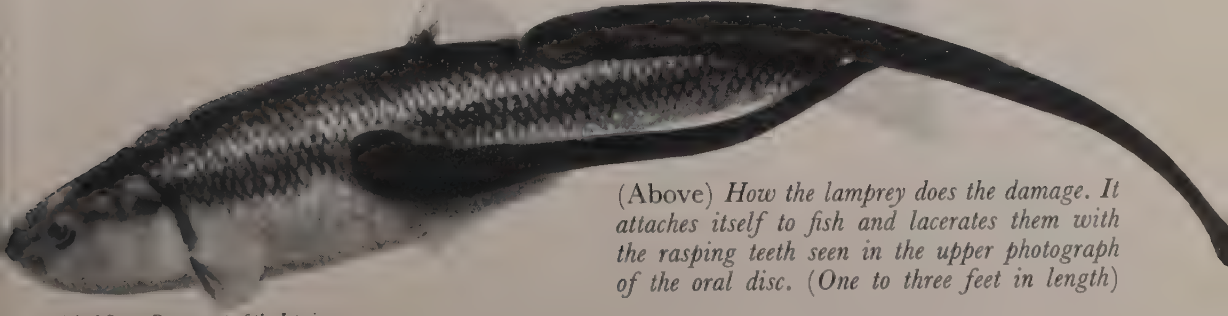
(Above) *Brooke's gecko, a nocturnal lizard, is probably a native of Africa and has made its way to the tropics of Central America and Asia. (Six inches long)*

G. S. Cansdale

The travels of the creatures on this page have resulted from chance or deliberate introduction by man, with varying effects. Brooke's gecko, for instance, a helpful hitch-hiker, is found in or near human dwellings where it catches insects attracted by lamplight. The Giant Snail travels as a stowaway on boats but was also deliberately introduced from Africa to India and Ceylon, and thence further eastwards. Eaten by human beings in Africa, in China and Japan it is fed to ducks; elsewhere it quickly becomes a plague. The lamprey, normally an ocean-dweller, developed into a scourge when it was enabled to reach the Great Lakes of North America, where it has nearly exterminated the trout



United States Department of the Interior



(Above) *How the lamprey does the damage. It attaches itself to fish and lacerates them with the rasping teeth seen in the upper photograph of the oral disc. (One to three feet in length)*

United States Department of the Interior

The Mollusca is another order that has provided a pest much in the news just after the recent war: the giant snail of East Africa. It arrived in Ceylon and India by easy stages and has thence spread to Malaya, Indo-China and the Pacific Islands, partly carried without intention, partly a deliberate introduction by Chinese or Japanese as food for their ducks. Details of the snail's wanderings have recently been written up and in most places it seems to become a plague within a very few years of arrival. The strongest measures have been enforced to stop further spread and all possible control action has been taken in areas already overrun, while it seems as if local predators, especially some beetle larvae, are likely to attack the snail. The danger may therefore not be quite so great as it seemed at first. A closely related giant snail is found in West Africa where it is much used for food; so much, in fact, that collection is allowed only every second or third year and the stock is thus conserved. It is a pity that man does not seem prepared to act so efficiently as a predator in the Far East!

When we consider man's deliberate introductions of wild animals, most of which took place in the 19th century, it is impossible to deny that, with a few exceptions, these introductions have turned out to be tragic mistakes. In Great Britain we have a number of examples, of which the grey squirrel is the most notorious. It seems to be more or less omnivorous and, finding itself without the large birds and beasts of prey that control it in its native North America, it has spread over a great part of England from its first effective introduction about seventy-five years ago. It is usually blamed for the decrease of the British red squirrel's numbers, but though it is to some extent a competitor, it is not entirely responsible for the latter's scarcity. It seems likely that the red squirrel was the victim of an epidemic, from which it is now recovering in some areas, and we can only hope for a similar disease in its fairly closely related American cousin. Opinion is unanimous that the grey squirrel in England should be attacked everywhere always and by all means: though this point seems not to be generally known it is, in fact, illegal to keep one alive without official permission.

Another rodent was first introduced shortly after the grey squirrel: the fat dormouse from Continental Europe. It is something the size of a rat, comfortable in proportions and with a very bushy tail. Lord Rothschild released a few pairs in the Tring area in 1886 and there were several subsequent importations. It established itself slowly, but gradually spread into several adjoining counties. At present it seems to be doing little serious damage and keeps largely to the neighbourhood of houses, sometimes being found in roofs, and it is too early to say yet whether it will become a pest. It is, however, considered potentially dangerous enough for the Ministry of Agriculture and Fisheries to have initiated a survey of the problem.

The little owl is still the subject of argument. After being introduced from southern Europe in the latter part of the 19th century it gradually made itself at home and must be considered fully naturalized in England, though it has not spread to Scotland or Ireland. As Aristotle noted over 2000

entral Office of Information

Cutting a ten-yard belt through a swamp, in the campaign against malaria mosquitoes in Nigeria. They have travelled widely and, having been inadvertently introduced to many parts of the world, cost huge sums to keep in check

By courtesy of Pest Control Ltd

Popper

The Colorado beetle, after a long hop from the southern United States, settled in Europe. Constant vigilance has kept the few to invade England under control

years ago, the little owl does some of its hunting in the twilight and early dawn, and it is true that it takes a few common birds, especially in the breeding season; but careful investigation has shown conclusively that rodents and large insects make up the bulk of its food and it must therefore be considered as a useful rather than a harmful settler.

The pheasant is the only other alien bird of importance now established in Great Britain. Introduced from south-west Asia—probably by the Romans and certainly before 1059 when it was mentioned, with partridges, in the Waltham Abbey Ordnance—it seems to have become naturalized though it is doubtful whether it would survive without some human assistance.

The most striking examples of introduced animals becoming large-scale pests are found in Australia and New Zealand. The introduction of the wild rabbit into Australia will perhaps remain the greatest single mistake ever made in this line, for it has cost that country hundreds of millions of pounds. The first wild rabbits were imported in 1837 but the real menace dates from 1859 when 24 rabbits were liberated on an estate near Geelong. In the next six years the owner of this property killed 20,000 but had to admit that there were nearly as many still left. As far back as the eighties the Government of New South Wales spent £1,500,000 in seven years trying to control the pest, and that was a lot of money in those days. As in Great Britain, rabbits are fond of other things than grass and they have cleared enormous areas of tree scrub by barking trees and eating seedlings as they appear. They are also selective feeders in pastures and gradually cause deterioration by letting the unwanted plants take control. It has been reckoned that without rabbits the Commonwealth could carry 20 per cent more livestock. There have also been secondary effects. Intensive poisoning campaigns have done terrible damage among native birds and mammals, and so have the foxes which were brought in to control the rabbits, quite without success. On the credit side must be put the vast numbers of skins and carcasses exported—428,000,000 skins and 90,000,000 carcasses in the five years ending in 1949—but this is very inadequate compensation.

Valter J. C. Murray

It is a pest. The grey squirrel is certainly an unwelcome arrival in Great Britain, where it feeds on poultry, game, birds' eggs, fruit, vegetables and the shoots and bark of trees. For this reason man, having deliberately introduced it about 1876, is now trying to get rid of it. (About eighteen inches in length)

Is it a pest? Many people think that the Little Owl, introduced between 1874 and 1900, does harm, in spite of an investigation by the British Trust for Ornithology which proved that by far the largest part of its diet consists of rodents and injurious insects; only a few instances of depredations among game and poultry were found. (It is eight inches long)

Eric Hosking

Markham

Will it become a pest? The Fat Dormouse was introduced from the Continent in 1886 and has but gradually increased in its new home. Doubts about its character are not yet confirmed but the Ministry of Agriculture is keeping a watch on its habits. (Overall length: twelve inches)

Melbourne Hera

The multiplication of alien rabbits and deer has necessitated campaigns of slaughter conducted by (above) *Australian farmers,* (below) *deer-'cullers' employed by the New Zealand Government*

In New Zealand the position is rather different, for its fauna was at one time quite unique, with only two native mammals, both of them bats. The Maoris had arrived with the Great Fleet in the 14th century, bringing with them the Polynesian dog and a rat native to many of the Pacific Islands: the former was no doubt just a human companion, and it is possible that the rat was used for food. Both were liberated but neither established itself fully and the dog has quite disappeared. It is hardly surprising, therefore, that the European colonists felt it almost a duty to introduce many of the animals with which they were familiar in their homelands. At first this was done in a rather haphazard way but Acclimatization Societies were soon organized which carried on the work into the present century. Something like 45 kinds of mammals were imported and liberated and of these 25 have established themselves in greater or lesser numbers in the wild state, in addition to the rats and mice which had come uninvited in the ships. They included wallabies and opossums from Australia, wapiti from North America, sambur deer from India and red deer, stoats and cats from Europe. In addition, no less than 130 kinds of birds have been introduced since Captain Cook

By courtesy of the High Commissioner for New Zealand first landed in October 1769, and it is estimated that 24 of them may be considered established.

Many of the mammals brought in found completely unoccupied niches ideal for them and multiplied rapidly: the pigs and goats—which reverted to the wild form though imported as domestic stock—and several kinds of deer are perhaps the most important elements, largely because of their size. For the deer particularly there has been a policy of organized slaughter for many years, though without affecting their numbers noticeably. The rabbit has become a plague nearly as serious as in Australia and, together, these mammals have brought about far-reaching changes in the quite unique forest flora. Several smaller carnivores, notably the weasel, stoat and ferret, were imported as natural enemies of the rodents: they have no doubt exercised some control on these but they generally found the native birds easier prey. The birds introduced to New Zealand were mostly of British species: some are useful or neutral but others have turned into pests.

New Zealand provides an excellent example of the successful introduction of sporting fish, especially those of the trout family, into streams poor in native species. Some kinds, especially the salmon, have proved impossible to establish but the brown and rainbow trout-fishing in many New Zealand rivers is now world-famous.

These are but a few of the wild animals, varying infinitely in size and family, which with man's conscious or unconscious assistance have successfully invaded and made themselves felt in almost every corner of the inhabited world. Man tends to learn lessons slowly and rather painfully, and it was not until well into the present century that he realized that introducing animals into new surroundings was rather like playing with fire. Australia and America, two of the worst sufferers, now impose the most stringent controls on the importation of livestock and in most countries there is provision for very drastic inspection of imported goods, especially of vegetable produce, to prevent the unintentional smuggling of such unwanted pests as the Colorado beetle.

Apart from alien animals introduced by man among the natural wild fauna, with results that he may or may not be able to control, there is of course the whole range of domestic animals which he has deliberately introduced into new countries, thereby affecting their geographical distribution while retaining direct control over it. In previous articles I have said when and where many animals became domesticated; but I have hardly touched upon this aspect of man's action in adapting them to his purposes. The subject is a vast one if we consider it only in relation to the movement of existing stock, bred to suit a particular environment, from one part of the world to another. In recent centuries this movement has taken place mainly from the temperate zone of Western Europe to similar climatic zones of European settlement in North and South America, Australia, New Zealand and South Africa. But it has also taken place to some extent between the temperate and tropical zones, and within the latter. Here we encounter another aspect of human action affecting the geographical distribution of animals, namely, the introduction of domestic animals to suit different climates and the selective breeding of varieties suited to life in those climates.

In temperate zones the stock-breeder's job is fairly simple, for he has a wide choice of animals suitable for many different conditions and all purposes. The expert's task now is to make stock available for other habitats, especially in the tropics, since here lie the greatest areas still relatively unexploited for food-production by modern methods.

Perhaps the two most important qualities required in parts of the tropics are heat tolerance and resistance to disease. In Fiji it was found that various breeds had different degrees of tolerance to heat, a quality previously unconsidered, for stamina and high productivity had been the points generally aimed at. This factor is even more important in Northern Queensland where the annual average shade temperature is no less than 84° F, with a summer maximum of 118°; here the introduction of humped Indian zebus from Texas for crossing with Herefords has produced an animal which puts on more flesh and matures earlier than any English purebreds and has allowed the occupation of 7500 square miles of previously unused cattle country. This heat resistance is partly hereditary, but hair colour and texture are also important, for a sleek, pale coat makes a much more efficient insulating jacket than one that is dark and rough.

In Africa the problem of disease is generally more important. The normal policy in Colonial territories is to cross suitable beef breeds with the native African zebu and combine the weight and quality of the former with the immunity to some tropical diseases of the latter. The complete answer is far from being found but it probably lies in a combination of hygiene, medicine, management and selective breeding.